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PSYCHOLOGY AND PHILOSOPHY.

I.—THE PHYSICAL CONDITIONS OF CONSCIOUSNESS.

By HENRY MAUDSLEY, M.D.

IT is certain that by no exercise of consciousness of which we are capable can we explain what it is in itself: consciousness must be a fundamental fact in all its functions—*inexplicable, ultimate*. The aim of sober inquiry is, therefore, to search and, if possible, find out the conditions of consciousness—the conditions, that is to say, under which it arises, varies, sinks and lapses. And, inasmuch as those who base psychology entirely upon its revelations cannot but acknowledge that it is not essential to mental being at every moment or at any moment coextensive with the whole of it, but that mental powers exist habitually and even act occasionally in the absence of consciousness, they also may view with approval every effort to discover and set forth the physiological conditions of its occurrence.

At the outset it is evident that those conditions, if they ever are discovered, will be discovered only by observation of suitable instances and by legitimate inductions from them. No intuition of self-consciousness can possibly help in the matter; the self-revelation of any instant of its being is a revelation of the instant only, does not contain a revela-

tion of the antecedent or underlying conditions of that illuminated instant. Furthermore, it is not necessary that the instances observed and noted be complex and extraordinary ; as good instruction may be obtained from simple and common instances, fitly selected, as from the most complicated and rare, provided that they be observed accurately and carefully weighed. The good use of uncommon facts is to awaken a curiosity and attention which common facts fail to awaken.

I.

Consciousness implies discrimination : *that* is the manifest condition of its origin. Now, discrimination means not a separate impression alone on the brain, but the feeling that it is separate or different from something else ; wherefore, consciousness is not a simple but a duplex event. Were the impression entirely separate, without relation to the foregoing or accompanying impression, there would not be consciousness ; without some bond of connexion between the two states they would be as distinct and unrelated as impressions made upon different minds. He who could not discriminate two colours, or two feelings, or two thoughts, but, by superposition, lived exclusively in one feeling, or in one thought, would not be conscious of sensation, feeling or thought. The bond of a bodily unity between the different impressions there necessarily is always, but conscious unity is something more : there is the physical connexion of an underlying bodily unity ; there is also a certain active state of that connexion and unity, which is the condition of consciousness.

The common way of speaking of consciousness seems calculated to mislead, if not to produce misconception of its true nature and functions ; for it is spoken of as if it had existence apart from each particular fact or act of consciousness—as if, indeed, it were a sort of illuminated mental atmosphere into which states of mind arose and so became known. Such terms as the ‘threshold’ and the ‘horizon’ of consciousness tend perhaps to keep up misconception. There is no such domain of supereminent being ; a general or abstract consciousness is not an existence at all, it is no more than a general name or notion. What is a fact is the particular conscious state at the particular instant. There are so many consciousnesses as there are sensations, emotions, thoughts : a redness-consciousness, a greenness-consciousness, a sourness-consciousness ; a tree-consciousness, a sea-consciousness, a star-consciousness ; an anger-consciousness, an envy-consciousness, a joy-consciousness ; and

there is no consciousness apart from the particular act or state of consciousness. Indeed, it may be questioned whether it is right to speak of 'states of consciousness'; it would be more correct to speak of states of mind, or of functions of mental organisation, which may be conscious or not.

Again, consciousness is not, as commonly implied, of constant quality or quantity, but is actually—as follows necessarily also from what has just been said—an extremely inconstant and variable state; varying in degree from the greatest intensity down to zero, and in quantity from a large expanse down to a vanishing point. Being incident to the particular mental state, and to the particular tract of nervous substratum subserving that state, it is qualified and localised thereby. Anyone who will attend closely and patiently enough to his own consciousness, when thinking, may discover, perhaps, that he never does think with his whole brain, and suspect even that he thinks with different strands of it when thinking of greatly different interests and situations. If it be not right to speak of consciousness as having extension and being divisible into parts, that is for the same reason that it is not right to speak of one sense in the terms of another—to speak of a loud smell, a red taste, a shrill touch, a bitter sound.

The *cogito ergo sum* of Descartes, if translated fully by exposition of its implications, would run thus: I (who am) think, therefore I (who think) am. The axiom implies tacitly, whether designedly or not, that consciousness is not the fundamental fact of being, although, no doubt, my consciousness is the fundamental fact of my conscious being. Everybody who wishes to be understood seriously takes it for granted that he exists, even when he is not conscious, in a scheme of things which exists when he is not conscious of it. There is the conscious *I*, and there is the unconscious *I*. Now the conscious *I*, when I reflect, certainly does not include the whole *I*; the *I* who reflect is not ever inclusive of the whole contents of my personality: it is the *I* of the moment—that is, of the then mode of my Ego; which may be very different from the Ego of twenty-four hours before or afterwards, and is certainly different, never exactly the same, on every occasion of my thinking. If the subject of which I think interest me not deeply, the reflection on it is a reflection on it by a part of me; if it interest me more deeply, the reflection on it engages more of my mental being; if the situation be congenial and grateful, the reflection on it is by one part of my mental being predominantly; if it be disagreeable and uncongenial, it is by another part of my

mental being predominantly : the reflection, in fact, may be ever so partial and incomplete, it may be fairly full and complete. Meanwhile, the unconscious *I* has not undergone any change, or at any rate anything like a corresponding change ; it lies deep, basic, silent for the most part beneath all conscious manifestations ; they are like multitudinous waves on its surface, some of which reach deeper down than others, but none of which reach its lowest depths. Inevitably then does the axiom of Descartes assume the fundamental fact of unconscious beneath conscious being—the *I* who am as the basis of the *I* who think ; and necessarily must those who would know and explain mental being pursue their inquiries in regions of which self-consciousness gives no information.¹ Whatever its value in its own province, the method of introspection is manifestly inadequate to sound the depths of mental function ; it is struck with fatal barrenness at the root.

The *I* who think never being the whole *I* who am, the so-called unity and continuity of consciousness are not the certainties which they are commonly proclaimed to be ; at the best they are derivative, not fundamental. Is there, in truth, a real unity of consciousness at all ? Is not the real unity the unity of the individual organism, which is fundamental and the basis of such unity as appears in consciousness ? Consciousness is actually a multiplicity, a series of immeasurably rapid discontinuities, rather than a continuity and unity ; there is no conscious thread of unity between its multitudinous rapid successions. The conscious Ego of to-day is as different as possible from the conscious Ego of twenty years since, and could not, as a matter of pure introspective or intuitive self-consciousness, know itself to be the same. There is no sufficing direct intuition of identity, that is to say ; the knowledge thereof is indirect, discursive, through memory of scenes and events, retrospective, a historical continuity. It is because I remember the scenes and events, and how the individual who is now *I* acted in them, that I know that I was that individual ; not because I have immediate consciousness of the sameness of self. I am so much changed since then that, except for my historical consciousness, I could not know myself to be the same, could

¹ There is a certain instinct or feeling or quasi-consciousness of the body, arising from the unity of working of its organs and declaring itself in the brain, which lies deeper than, and goes before, the conscious ‘I think, therefore I am’. Messages are sent continually to the nervous centres from every part of the complex network of nerves distributed to its different parts ; and it is in these impressions that the basis of the *Ego* lies.

not believe that I ever felt, thought and acted as I did ; and if my past self were to meet me face to face and to greet me as myself, I should not recognise and own it. Life is a succession of scenes in which the curtain falls on a dead self and its interests to rise on a new self and its interests. Time is the consoler and reconciler, because we change with time and are no longer the same : it is not I who am who was bereaved or offended, it was the *I* that I was.

II.

The habitual recurrence of impressions of the same kind and of respondent acts ends notably in an unconsciousness of them and the acts. They and their motor machinery become automatic in action ; a fitly organised adaptation of action to impression is perfected ; and the subject is unaware of them and their motor outcomes unless he deliberately think of them. The double mechanism of reception and reaction, perfected for its purpose, acts simply and directly as one, without needing or causing any coincident activity. When a man twirls the end of his moustache he does an act which he has consciously learnt to do, and of which he is conscious as he does it ; but he may do the same kind of act unawares—even when, struck with apoplexy, he is entirely unconscious of what he is doing. The same tracts of the brain are in the same action ; but in the former case there must be some difference in the act to account for the consciousness. What is the difference ? Not a greater intensity of the particular activity, whereby what was below consciousness rises into it, since there is no evidence of that either in the increase of the stimulus or in the character of the act, nor any probability that such an increase of intensity, if it took place, could ever excite consciousness during the deep apoplectic coma. Is not the difference this—that there is the addition of a concurrent or rapidly alternating activity of another tract of brain which the apoplectic damage has paralysed ; that the action, when conscious, is not simple, separate, complete in itself ; that it involves an induction of activity in related parts, a certain sympathy or synergy of them ? If there be such a reflection of the particular energy on to other related tracts, it will naturally come to pass that the character of consciousness will vary according to the number of them implicated, being large and calm consciousness when they are many, intense and narrow consciousness when one only is implicated.

The fundamental fact in man's relation to the world

outside him, as it is in the relation of every living thing, is reception of impression and reaction thereto, and thereafter suitable adaptation of reaction to impression in the progressive development of structure and function. Variation of impression solicits necessarily a corresponding variation of reaction. In order that such further adaptation may take place in mental development, separate nerve-tracts must come into play, interact fitly with the old ones in new permutations and combinations, and so organise in the end nervous plexuses into definite patterns ; which patterns are then the organised faculties of different functions. While this is taking place—while the process of adaptation is going on—there is consciousness : when the process is complete, the adaptation perfected, consciousness lapses. Synergy, then sympathy, afterwards synthesis—such is the ascending order of events in mental evolution, whether of the individual or of the kind.¹ The elements of mental being act together, feel together, then think together—are purely reflex, then reach sensory consciousness, and lastly become intellectually conscious. Now, inasmuch as they are capable of acting together before consciousness dawns and after it has set, it is plainly not an essential part of the mechanism of the event ; it has the character rather of an accompaniment of the event—a something which appears naturally at a stage of the process of the mental organisation which is taking place, a necessary concomitant of the consolidation of the coincident or rapidly alternating activities.

The process of learning a skilful movement by patient practice so well that it becomes instinctive and even unconscious, is manifestly then a process of consciousness lapsing into unconsciousness. We are conscious of the process while it is a becoming, unconscious of it when it has become ; conscious of the *forming*, unconscious of the *formed*, neurotic pattern. To ascertain exactly the conditions of the learning and the conditions of the learnt must be to ascertain the conditions of consciousness and of unconsciousness. The conditions of learning are, as we have seen, efforts of adaptation during which permutations and combinations take place until the fit adaptation is made, the proper neurotic pattern, that is, organised, when non-essential interactions

¹ The complex muscles of the stomach, the intestinal tract and other internal viscera notably act together habitually and purposively without consciousness ; it is only when their action is deranged that we become dimly and painfully conscious of them. It is probably the same with the low organic creatures that possess the simplest forms of nervous structure. In both cases we attend, as it were, upon the dawn of consciousness.

cease. Consciousness goes along with the coaction of parts in a process of combination or integration; in other words, it attends the reflection of the energy of one nerve-tract or nerve-grouping on to another nerve-tract or nerve-grouping in the making of a new one. In the accomplishment of this process we learn to *conse*nse the things, to feel them in their connexion or relation, to know them together (*con scio*), to be *conscious*; and after its accomplishment we come to know them so well that our knowledge is latent or unconscious, implicit, unless we reflect and make it explicit—that is to say, unless we repeat the process with deliberate attention.

What is the addition then when I reflect, when I am the conscious *plus* the unconscious *I*? It is not an addition to the *I*, it is an addition only of a change in the *I*: it is the awakening of an unconscious part of it to consciousness, the implication of other activities by reflection; and it is the reflection which conditions the consciousness—is objectively that which subjectively is consciousness. Thus it appears that the psychological term *reflection* is founded literally on a certain positive physical basis. According to the number of the thought-junctions is the richness of the reflection—that is, the number of incidences or coincidences of related activity; and the richness of the reflection determines the quantity and quality of the consciousness, which may be concentrated and exact, or ever so vague and diffuse.

If the foregoing considerations be sound, they justify the conclusion that the condition of consciousness is a certain concurrence of activities, or alternation of activities so rapid as to seem concurrent. The conclusion may be entertained in regard of intellectual consciousness; but how can it be true of the simplest consciousness—of a simple feeling or sensation? Here it is necessary to bear in mind that sensations and feelings that appear simple are really complex, actually compounds of more rudimentary elements; sensations seemingly most simple being notably capable of resolution into combinations of simpler sensations by those who are endowed with the fitly acute sensibilities and have cultivated them by practice. It is hardly possible to say of any sensation that it does not contain *extension*. However, we may assume for our purposes the existence of a primary and simple sensation; we are then driven perforce to the conclusion that the primary element of a sensation is, paradoxical as the statement sounds, insensible—insensible, that is to say properly, to me in whom it is; which is not equivalent to saying that it has not a *special susceptibility* or *quasi-sensibility* of its own. At any rate, however simple

the sensation be, the conditions of its being are not simple : it is an event the molecular conditions of the occurrence of which are exceedingly complex, more complex than the constitution and motions of the solar system. For what does the structure of the nervous unit of the simple sensation mean ? It means, if I may so speak, nothing less than a most complex and concentrated organic abstract of the general life-relations of all creatures that lived on earth before the level of sensation was reached in the ascending scale of animal existence : a sort of condensed or involuted equivalent of the neurotic pattern or plexus which is organised in the supreme nerve-centres to subserve a particular function but which, instead of being concentrated into a molecule, is there spread over a considerable area. It is impossible, therefore, to stimulate a nervous unit without stirring a multitude of inconceivably minute activities, the quintessential abstract of manifold vital relations with the external world.

It is a fair question, however, whether the least pain or sensation would be felt by the individual if we could imagine a nerve-unit in him to be hurt perfectly separately ; for it might be cogently argued that the condition of pain is the sympathy or synergy of like units to which it is organic neighbour ; just, in fact, as the decomposition of a chemical compound is due to sympathy or synergy of similar molecules, and could not take place at all were the disturbance limited to one molecule only—were it not capable of propagating a similar disturbance in neighbouring molecules by the easy infection of similar motions in elements of the same kind. Now if the constitution of the nervous unit have the nature and meaning which I have supposed it to have, it is obvious that when it undergoes stimulation the relations embodied in it as organised or capitalised experience—its involuted memories, so to speak—are unfolded, as it were, and used. And if the affection of it be of a disorganising or destructive character, as we have reason to think it is when pain is felt, the sensation of pain or suffering is the conscious equivalent of the suffering and shrinking from an unwelcome stimulus which is manifested by the low forms of animal life that possess not any nervous tissue. For it is certain that all forms of living matter exhibit an attraction for that which maintains and fosters their life, and a repulsion to that which lessens and destroys it ; and certain also, one might add, that the nervous system is developed from the same outer layer of the embryo from which the cuticular covering of the body is developed—the so-called epiblast or ectoderm.

Passing from these speculative reflections, what we have to realise here is that pain-consciousness is a consciousness *sui generis*, entirely different from any of the different forms of sensational consciousness, and that although we apply the general term *consciousness* to all of them, there is no common abstract consciousness; that in talking of them we are talking of entirely different things. Our true business is not to search out the conditions of consciousness, but the conditions of each particular consciousness—the conditions, that is, of pain and, in due course, of every other special feeling or so-called affection of consciousness. Could we explain exactly under what conditions pain-consciousness occurs, the explanation would not be an explanation of the conditions under which tactile consciousness or visual consciousness occurs; for they are not, like it, of a destructive or disorganising, but rather of a conservative and organising character.

It is necessary also to apprehend clearly in this connexion that there is acquired functional organisation of nervous plexuses as well as fixed inborn structural organisation of them—that is to say, organisation of existing structures to act together to subserve particular functions; and that it is such organisation we mean when we speak of the organisation of a particular neurotic pattern in the supreme centres of the brain. There are multitudinous *nervous plexuses* constituting the complex structure of the brain, and they are capable of forming manifold *neurotic patterns* in mental organisation. These patterns may be ever so temporary and transient, or they may become fixed and lasting when they are habitually repeated. The theory is that consciousness attends the functional organisation of a particular neurotic pattern; that it lapses when such a functional plexus has been definitely formed by habit; and that it is necessarily aroused again when that pattern is broken up or disorganised by the irruption into it of other activities. This last operation, corresponding probably to the disorganisation of the nervous unit of sensation which is the condition of pain, is notably difficult and disagreeable in proportion to the strength of the habit and may be positively painful.

Relativity is implied necessarily in every fact of consciousness—is the very essence of it. Whether we speak of self and not-self, of inner and outer, of up and down, and the like, we take this relativity for granted, implicitly or explicitly. Nobody could ever be conscious that he was an Ego had he not a correlative consciousness of a Non-ego. Now the external world, as individual experience, means

motor reaction ; it is in reacting to the impressions of it which his senses are adapted to receive that the person frames the forms and substances of an external world—frames the world as he experiences and conceives it. When all these motor reactions, both direct and representative, are entirely shut off, when neither they nor the intuitions of them in the supreme centres take place, then consciousness of an external world ceases necessarily. By monotonous continuance of one sort of sensory impression, as, for example, by gazing or listening continuously, a person may notably bring himself into such a state of complete motor quiescence that consciousness becomes vague, confused, and even ceases. Let any one who is in a state of bodily comfort lie perfectly still in bed, in a thoroughly unconstrained and easy position, not exerting the least muscular tension, he will not be conscious of the attitude of his limbs and body, not even whether one limb is touching another or not ; he is not only unconscious of attitude, but unconscious of any sensory impression. Every sensory impression implying suitable motor adaptation, it would be impossible without such fit muscular reaction to see an object, to hear a sound, to smell an odour, to feel a touch ; the motor element is an essential part of the perception. The dissociation of the sensory pole of a nerve tract from its motor pole and from every other motor pole would be the abolition of its sensation. It is probable that an infant could never feel if it could not move.

Reverie is not thought, but the absence of thought. The rustic who, musing vacantly, seems deep in thought, is not really thinking ; he is pretty nigh unconscious, and therefore goes on musing for any length of time without weariness. His motor quiescence ends in a dim, dreamy, hazy consciousness which is next door to unconsciousness, and easily passes into it. The reading of an uninteresting book occasions drowsiness, and the reading of any book soon sends to sleep one who is unused to reading or who is exhausted by great muscular exertion. His attention fails, we say ; in other words, he cannot keep up the nice motor adjustments so as to apprehend or grasp definitely the words and realise their meanings. The various means of trying to go to sleep have the same aim and exemplify the same principle : their aim is, first, to limit the area of cerebral activity so that most of it may cease ; second, to make the still continuing activity as monotonous as possible, until motor apprehensions of the recurring images fail. So also is it with fatigue and exposure to extreme cold : the be-

numbed and torpid nerve-centres declare their incompetence by an utter incapacity of further exertion and an ensuing irresistible inclination of the person to lie down, which, if yielded to, is followed by instant and usually fatal sleep. The inability to move a step further and the supervention of unconsciousness go along together.

On entering a room we seem to see the various prominent objects in it at one glance. That is not really so ; we see them in a quick succession of glances, being unconscious of the rapid movements of the eye by which each object is successively apprehended. If the eye be fixed steadily and exclusively on one point—a difficult thing to do, but which may be done by practice—"the whole scene becomes more and more obscure and finally vanishes".¹ The objects first appear dim, and then, if the almost uncontrollable impulse of the eye to wander be successfully resisted, they fade away. These phenomena Sir C. Bell believed to be consequent upon the retina being subject to exhaustion. Is that the true, or at any rate the entire, cause ? Is it simply that the retina is exhausted, or is it that consciousness wanes and ceases in proportion as an impression is cut off from all its associations, sensory and motor ? The exceedingly rapid play of the very fine movements of the eyes by which we are conscious of the different objects in the room, as if we took them all in at a single glance, may help us to conceive the probably still more rapid interplays between nerve-tracts in the brain which are the apparent conditions of consciousness : movements of such coruscating rapidity that they might be compared perhaps to the infinitely varied and rapid play of sunlight on the sea-waves which constitutes their 'multitudinous laughter'.

Impressions are always being made upon us by our environment, many of which we are habitually unaware of, but we live and exert a certain muscular tonicity or tension, even when we do not move, in relation to them ; if we ceased entirely to react in that way we should become absolutely unconscious, and we should never become unconscious in the degree of sleep (which is not ever absolute insensibility) did we not cease to react to a great many of them. How continuous and how essential to our full personality these impressions are, even when we are habitually unconscious of them, we never realise adequately until we find that we have lost them. A sudden deafness in one ear causes great uncertainty of position and movement, and

¹ Sir Charles Bell, *The Hand*.

perhaps actual vertigo ; the suddenly-produced numbness of a part of the body, even if it be of a finger only, occasions a singular embarrassment and sense of incompleteness of self for a time, accompanied by a difficulty in realising one's personality and its relations, because it cuts off a part of our habitual, although unconscious, hold on the environment ; a strong agitating emotion completely incapacitates any one from apprehending external objects, making him walk about among persons and things as if in a dream, because its internal commotion renders impossible his habitual motor adjustments. In all such cases there is functional disintegration of the framed neurotic patterns of habitual perceptions and acts. When its habitual relations with the not-self are maimed, the self is lamed and incomplete.

III.

Without doubt the same tract of the brain is in action in the performance of a particular perception and in the memory of it ; and therefore there is the same kind of consciousness when there is consciousness. To revive that consciousness in any instance it is necessary to repeat more or less strongly the original function—we cannot remember a perception without including the motor element which enters into its original composition. In regard of sight and hearing it is notably much easier to reproduce the reflex act of perception, and so to conceive in memory what we have experienced, than it is in regard of a smell or a taste ; the motor adjustments that accompany these latter experiences are not cultivated in man (it is different in some animals) definitely and persistently, and do not therefore enter into his intellectual structure as those of sight and sound do, either because they are not needed or because they lie nearer the organic life and are incapable of such cultivation. Whatever the cause, the result is that they are not available for conception : we cannot remember a smell or a taste in the realising way in which we remember what we have seen ; we can remember that we had such an experience, but we are obliged to make use of other sense-activities, especially that of sight, when we attempt to conceive a smell or a taste—that is, to reproduce its consciousness ; and even then we do not obtain a vivid and definite success. From smell and taste alone, uncultivated as they are in us, we should hardly know that there was an external world.

When a person talks rationally to us for a minute we go away and can recall to mind what he said ; the trains of

his thought followed the established order of our trains of thought, and are therefore easily reproduced by us: the corresponding neurotic plexuses have discharged the same function, the formed patterns of them being the same. Listen, however, for a minute to the entirely incoherent talk of a voluble lunatic, it is utterly impossible immediately afterwards to bring to mind what he said. Why? Because it is utterly impossible to reproduce or repeat in our brains, with their definitely organised neurotic patterns, the rapid succession of disordered ideas in their disorderly succession which went on in his brain—impossible, that is, to re-collect them: trains of association will not enable us to do that, because the reproduction of the incoherence is the disintegration of such organised trains, and therefore incompatible with their helpful action. His mad whirl of words produced its proper consciousness at the time, but we can no more reproduce that consciousness than we can commonly remember a complicated dream a few hours after it is past, or than we can remember exactly a pain. Most persons think they can remember a pain because they can remember the historical fact that they had it; but to remember it really, to revive the pain as it was felt, it would be necessary to reproduce in greater or less degree the disorganisation which was the condition of it—in fact, to have it again.

It is a common experience that when we have intended to do some act, it may be a trivial one, and have forgotten what it was, we feel an obscure mental disquiet or discomfort, a sort of uneasy sense of want, which is eased immediately we remember what the intended act was. In such case there must be a subdued mental activity below the level of consciousness, a sub-conscious or infra-conscious tremor, which occasions the feeling of vague discomfort; for it would seem impossible that there could be any such feeling were there not motion of some sort. Motion there is probably, but not of such degree of activity as to awaken consciousness, to make an induction of activity in related parts. How then to do in order to remember? How to raise the infra-conscious to the conscious? How, in fact, to induce the required synergy or coaction of parts? Now it is a well-known mental law of association that those states which have occurred once together or followed immediately are prone to occur together again or to follow one another immediately. In accordance with this principle we find the most helpful way to recall the forgotten intention is to go back to the act we were doing—perhaps an essentially unrelated one—when the intention came into our

mind, the act that was coexistent with it, or immediately antecedent or sequent to it. Repeating the act or imagining its repetition, instantly perhaps the forgotten intention flashes into consciousness. It is not that the subdued tremor is simply raised to the pitch of conscious vibration, but that it is brought into relation with the contiguous activity, whereby it becomes conscious and has its own activity increased : exciting the contiguous activity, we bring the sub-conscious tremor of the lost intention into relation with it and get a rapid interplay of reflections : we remove the block, so to speak, and make the junction of tracks.

In this process of reminiscence it is not consciousness which is the active agent going to work to search and find out the lost incident, as though it were a sort of illumination that was thrown into one after another of the dark mental recesses or chambers of memory until what was lost is found. There is no such possibility as a direction of consciousness to a particular receptacle of brain or mind, since the consciousness does not rise until the lost incident is found ; it is coincident with or instantaneously sequent to its excitation—does not occasion but is the recollection. It is nonsense to speak of consciously desiring or requiring what has been forgotten, since we are unconscious what that is which we desire or require, consciousness occurring only at the instant when it is no longer forgotten. The work is done really by the appropriate mechanism of the mental organisation, and is physiologically mechanical. Observation agrees with theory to prove this. When any one has learned a piece of poetry thoroughly, so that he can at any time repeat it with the greatest ease once he has got the proper start, the repetition is automatic ; he can then repeat it internally or aloud without thinking of the words ; and if he forgets a word or a line of it, the successful way to recall the lost word or line is not to think what it is, not to deliberately exercise consciousness in the endeavour to discover it, but to repeat the words or lines that go before it, while thinking of something else, or at any rate while not thinking of it. The process is notably quite different from one of striving to remember a piece of poetry that has not been thoroughly fixed in memory, when we must think and try to stir all kinds of related activities ; being rapid, instantaneous and spontaneous, whereas this is slow, labouring and voluntary. In the complete or unconscious memory there is plainly a sort of registration or perfected nervous mechanism of parts answering to the order of the words and capable of being put into action without regard to the

meaning of them. In order to be conscious of their meaning, if that is our aim, it is necessary to proceed more slowly with the repetition and to bring each word into distinct consciousness by realising the relations or associations of the idea which it denotes—that is to say, by stirring related activities which, then *known together* with it, make *consciousness*. Now it is obvious that the intervention of a process of this sort must interfere with and hinder the mechanical succession of the word-repetition; for it is to stir other activities where they are not needed and where they are therefore obtrusive and obstructive. Additional proof of this is seen in the fact that a few lines of a language not understood, if engraven well in the memory in childhood, can be repeated, once they are brought back to mind, at any period of life, and with as much ease and accuracy as the words of a known language which had been similarly committed to memory; also in the extraordinary revival and utterance of forgotten lines of poetry sometimes displayed in mania and other abnormal brain-states.

The foregoing considerations go to prove that in the continuity and energy which exist throughout nature consciousness has no part; that it is not an energy itself, but only an accompaniment of the actual energy. The whole business of mental function, as work, might go on without it just as the machinery of a clock might work without a pointer to indicate the hours. It is a necessary concomitant apparently of the process of manufacture of the mental organisation, not an energy at work in the manufacture. The misfortune is that ordinary language assumes it to be a kind of supreme energy, and so habitually vitiates thought about it. When any one accidentally touches a red-hot poker with his hand and instantly withdraws the burnt part, certainly before he has time to think and will the quick movement of withdrawal, we have been accustomed to say that the painful feeling causes him to do it—that the act is sensori-motor. Inasmuch as the pain is a consciousness, or what we improperly call an affection of consciousness, that is equivalent to saying that consciousness determines motion, is itself an energy; which is what we have decided it is not. The movement is really the work of physical structuralisation in response to a specially disorganising affection of it—a physical reaction of a special structure to a physical impression made upon it; the original aptitudes to certain combinations and successions of movements having been organised into definite nervous machinery by education and practice. A baby might not do it, although it would feel

the pain, might even press its hand against the poker, because of the absence of the requisite education-developed organic machinery ; or a person dead-drunk, because of the loss of the power of fit reaction which goes along with the loss of sensibility.¹ The fit self-protective movement is made because the impression is injurious to the organism, inimical to its life, the pain being a sort of outcry of danger and the accompaniment of a capacity and impulse to select and put into instant action a purposive function of escape that has become automatic. But the very same movement might, if rightly stimulated, be executed without consciousness ; for if the physiological experimenter were able to select out exactly and put into isolated action (which in such a fine and complex nervous structure it is impossible for him to do mechanically) the proper nerve-tracts subserving the irritating stimulus and the responsive movement, he would produce the same effect in a person unconscious of any pain. The pain therefore has no part in the actual circuit of work done, is not cause or energy, is only a necessary accompaniment of it.

Let us now suppose a person to do the same act voluntarily—to touch a poker not hot and instantly to withdraw his hand as if it were red-hot. There can be no doubt that just as exactly as he succeeds in imitating the act just so exactly does he put into action the same nervous machinery. But what is the addition to the affair ? Not the addition of any abstract consciousness and will, for the pain of the first affair was a consciousness, but the addition of another and higher kind of consciousness and energy. And what else is that addition but the addition of the concurrent activities of other nervous tracts and their interaction or communication with the nervous tract subserving the so-called sensory reflex movement. Were this movement to fail of its instant self-protective effect (which it might well do if it did not take instant effect before the disorganising action signalled by the pain had gone too far) the supplementary function of these other tracts would in

¹ A person drunk, but not quite dead-drunk, might do it automatically when he could not do it voluntarily, because his lower nerve-tracts might remain capable of function when the supreme tracts were paralysed by the alcoholic poison. We observe a remarkable illustration of the same kind sometimes in the case of a person under the influence of chloroform who, undergoing a surgical operation, writhes and yells as if he were suffering the most horrible pain, but does not remember, after the operation, anything about it, declaring that he felt not the least pain. His higher nerve-tracts were paralysed by the chloroform, but its effect had not gone so deeply as to paralyse the lower tracts.

any case be brought into use. If a person does not escape from a horrible pain instantly by means of the fit sensory reflex movements, these purposive movements are disorganised and practically paralysed, and he immediately begins to make the most energetic voluntary movements of escape. Should they fail, all his movements become disorganised *quoad* purposiveness—in fact, disorderly, convulsive, and eventually paralysed ; not otherwise than as a great panic of fright paralyses them instantly in some persons.

Thus much then concerning the probable conditions of consciousness. The conclusion is that consciousness is not part of any actual energy in nature, but the accompaniment of certain coincident or rapidly alternating energies of matter in a complex state of nervous organisation, disappearing when these energies are organised into such perfect consolidate coaction as to act as one, reappearing again when the co-organised plexuses or formed neurotic patterns are disintegrated. The natural order of ascending mental development from simple and concrete, through general, to still more general ideas, and from these upwards to the most abstract ideas, is the progressive co-organisation of two systems to act as one, and the further co-organisation of these integrated systems in ever ascending scale, until the ideal unity of a supreme head or will is reached in which all have abstract representation in the one and the one acts through all. Were this thorough, complete, perfect, there would be no consciousness ; consciousness attends upon its incompletenesses and its disintegrations.

IV.

The various and many times strange states of abnormal consciousness which accompany certain induced and morbid states of the nervous system go to show how baseless the metaphysical theory of consciousness is. It is only because such instances, recorded long ago over and over again, have been persistently ignored by those who have been the professed cultivators of so-called mental philosophy, being overlooked entirely by them or rejected as morbid facts which did not properly come within its scope, that their imposing fabrics of philosophy have been able to endure for a day.¹ As a matter of observation, consciousness is evidently capable of all sorts of disintegrations, mutilations, divisions ;

¹ They have been described and discussed by Combe, Mayo, Wigan, and by writers on mental disorders, as instances of *twofold personality*, of *double consciousness*, &c.

distractions so numerous and various in kind and degree as to prove that the conscious Ego has not real identity and unity, and that there would be no guarantee of personal identity were the affair an identity of consciousness alone. In the alternating and opposite phases of one variety of mental disorder, the so-called *folie circulaire* of French authors, the person is as unlike in thought, feeling and conduct as two persons of different character ; there is no continuity of consciousness between the one state and the other, but a complete break and transformation of it. Of the so-called mesmeric or hypnotic patient under the dominating influence of the operator it is impossible to say whether he is conscious or not : he is not absolutely unconscious, since he hears and does what the operator tells him, but he has certainly lost possession of himself and of the external world, and has consciousness only of the self which is possessed and governed and of the things in relation to which his executive machinery is set by the operator. So bound locally is his consciousness to the nerve-tracts which the operator selects and puts in action that it is possible sometimes to perform a severe surgical operation upon him without his feeling pain. His unity as a complete conscious individual is decomposed and destroyed.

There are notoriously insane persons whose mental derangement appears to be very partial, perhaps limited to one class of relations only ; while their conversation and behaviour are perfectly rational in respect of most subjects, so that no one would suspect the least derangement, no sooner are the particular relations in respect of which they are deranged brought into play than they discover their unsoundness of mind. The eternal surprise then is that one can be so insane who appears generally to be so sane. But what just cause of surprise is there ? It is obvious that the morbid tract is inactive during the rational phase of the person's existence, its function dormant, and that the moment it is stirred into activity the discordant note is heard and the music of mind marred. The event is no more wonderful than the discord of a musical instrument, one string of which is damaged : if a tune could be played upon it which made no demand upon that string, there would be no discord, and no one would suspect the derangement ; but when it is necessary to strike the damaged note, instantly the discord is made manifest. In this instance the affected individual is himself unaware of his distracted identity, although it is patent enough to lookers-on ; but there are notably cases of commencing mental derangement in which the sufferer

exhausts the capacities of language in his futile endeavours to express his unutterable sense of a distracted or lost self, and to make the distressing distraction which he feels conceivable to others. They, however, not being able to conceive it in the least, only receive his words as vague expressions of suffering, which they probably think incontinent and exaggerated, and may even pronounce 'hypochondriacal,' and pass them by without the patient and discriminating notice which they ought to obtain. The direct and patent evidence that consciousness is divided, the unity of the individual Ego confused and lost, they are unable to apprehend, because their consciousness is whole, and they are thoroughly prepossessed with the psychological assumption that consciousness is one and indivisible, not subject to conditions of time and space, and the like.

It were strange, were any inconsistency in human thought strange, how persistently we talk of the continuity of consciousness when the truth is that a conscious state is not continuous, but transient. There are so many *trains* or *successions* of thought, as we say justly, but there is not the least evidence of an abstract consciousness abiding between these successions ; no more evidence, in fact, than there is of an abstract express train keeping up a continuity between a number of express trains rapidly following one another on the same line. Moreover, the rapidity with which a train of thought passes through the mind is notably very different in different persons, and in the same person at different times—different, for example, in youth and in old age, in health and in sickness, in lively and in sluggish temperaments. In that inflamed state of thought and feeling which often precedes an attack of acute mania and gives the transient show of an extraordinary mental brilliance, the trains of thought follow one another with great rapidity at express speed ; in the brain-decay of old age they follow one another slowly and creep along sluggishly, the person being notably slow in apprehending, slow in thinking, slow in uttering his thought. In each case the measure of the rapidity is the measure of the duration of consciousness ; which may, after all, be a measurable function, whenever, if ever, we attain to delicate enough means of making the very nice measurements required.

How much rather empty rhetorical eloquence has been uttered at different times concerning the rapidity of consciousness ! We are challenged to admire the amazing speed with which it traverses the most distant regions of space, passing in the twinkling of an eye from Kamschatka

to Peru, from the fireside to the remotest star. As a matter of fact, if thought ever did make such a journey, it would take a longer time than light would to make the same journey. But it does nothing of the kind : it merely travels from one nerve-track in the brain to another lying perhaps so near it that a microscope is needed to show that they are different tracks ; and the speed, appreciable even for so microscopic a distance, differs in different persons according to each one's personal equation. The world with which alone consciousness has to do, is the world as it has been organised and registered in the brain by experience, and the journeys which it makes are no more than the microcosmic representatives of macrocosmic distances.

Consider briefly the striking phenomena of loss of memory in what is called senile imbecility—that is to say, in the extreme mental decay which sometimes takes place gradually in old age or befalls more suddenly after an attack of apoplexy. A person so afflicted says the same thing or tells the same story of his past life as many times in as many minutes, while forgetting instantly all recent events and utterly oblivious, on each occasion of retelling his story, of having told it before. The same nerve-tracts are in function on each occasion, but there is no *conscious* registration of its immediately previous function. It is impossible to say there is not memory seeing that the tale is remembered and told in the same words, but there is no memory of the former retellings. The more early and stably organised neurotic plexuses remain still capable of function, while the later organised plexuses answering to the events of later and present life have been rendered incapable of function by the failing nutrition and decay of brain ; the result being that there is no possibility of connecting the function of the former with any function of the latter, and therefore no memory of its repetition. The power of knowing them together,—that is, *consciousness*—failing, there is no possibility of reproducing it as memory.

The religious fanatic of India who voluntarily subjects himself to occasions of protracted physical suffering, or inflicts frightful injuries on himself, seems to be so transported by enthusiasm as to be insusceptible, or nearly so, to the torture which he might be expected to feel. Consciousness clearly has not full freedom of function, or else it would attend to the impressions of torture : it is under physical restraint, being fast bound to the strand or tract of exalted nervous function. There is a veritable *psycholepsy* or *neurolepsy*—the condition and effect of the psycholeptic strain being the induction of such a molecular state as to render conduction

impossible. Therefore the non-implicated nervous tracts or areas are pretty nigh or completely incapable of consciousness, although not necessarily equally incapable of all function. Now, to be absorbed exclusively in one sensation or thought is to be unconscious. But in this case the exclusiveness is probably not quite complete. The consciousness, so far as it exists, is perhaps somewhat like that which persons have who rush frantically to the doors in a panic when a theatre takes fire, and undergo or inflict injuries in their wild fright, without knowing or feeling what they do.¹ When they come into possession of themselves after the danger is past, they have a dim sort of consciousness of one or two things that happened around them, but they are quite unable to give anything like an exact or complete account; they remember no more perhaps than that they found themselves at a certain place, without remembering in the least how they got there.

These instances, and many like instances which might be adduced, go to show that particular tracts of the mental organisation may be put into an ultra-physiological, if not pathological, action during which they are isolated functionally from the rest of that organisation, and that all kinds and degrees of strange, partial, confused and distracted states of consciousness answer to the different degrees and extent of such extraordinary activity. Always the localised activity involves a localised consciousness. While the *complete* isolation of a particular tract, its exclusive activity, would be the abolition of consciousness, its almost complete isolation would be the condition of that sort of ecstasy into which saints of different religions have been in the habit of falling, and in which it is impossible sometimes to say whether they are conscious or not. It is the abstraction of this negation of everything definite which they call the Infinite, and imagine themselves then in ecstatic intercourse with.

When a particular mental tract is engaged in an extraordinary activity which is yet not so extreme as to make a complete break of conduction with other tracts, its tendency notably is to attract concordant vibrations in them and to

¹ The production of a hallucination by the intense activity of a vividly conceived idea illustrates the same principle of action. When the idea reaches such intensity as to be perceived as external object, the person is unconscious of the idea, oftentimes cannot be persuaded that he has had it. He has not so cultivated psychological introspection as to be able to catch the idea in the instant before it is transformed into objective hallucination: a thing which may sometimes be done.

repel vibrations that are not concordant. An intense and uneasy sensation or emotion so engrosses the mind as to make it impossible to carry on a continuous train of thought or a definitely organised succession of nice purposive movements ; it attracts involuntarily the reinforcements of congenial or consonant thoughts and repels, being insusceptible to, thoughts that are not consonant ; thus it reinforces and intensifies its special consciousness, and, failing utterly to come into relations of consciousness with uncongenial thoughts, makes reflection partial and prejudiced—destroys judgment. Many positive insanities of thought and feeling begin in, and are the permanent outcomes of, such temporary disorders of reflection ; they are their pathological developments.

The fundamental note of mental insanity, as of all errors of thought and feeling, is the want or loss of a just equilibrium between the individual and his surroundings ; the disorder marking a failure of adaptation in himself which is oftentimes a congenital fault that he owes to his forefathers. Strong passion is brief madness because the internal commotion of it, usurping consciousness, prevents full and free reflection and adaptation, and, putting the individual out of just *ratio* with persons and things, makes him *irrational*. Just as he loses his head in a panic and cannot make the proper motor reactions, so he loses his hold on the outer world when he is agitated and stupefied by some great temporary emotion, or possessed constitutionally by an exaggerated self-consciousness. In the latter case he is said to be very sensitive, and the quality is perhaps regarded as a fine merit of his nature ; but whether merit or misfortune, it is really a case of deficient power of adaptation, and therefore fundamentally a defect of his nature—a defect natural to him, occasional to a strong nature brought low by sickness. His mental structuralisations represent a consolidate past, built up from generation to generation, through which there has run a fault of defective adaptation. His right aim, if he would or could mend his nature, should be to learn to resolutely adapt himself to circumstances or to adapt circumstances to himself, and so to attain to a just equilibrium in which self-consciousness might abate or well-nigh expire. As he who is in a state of perfect bodily health is for the most part unconscious that he has a body, and only becomes conscious of it when something goes wrong with its functions, so the ideal of a perfect state of mental health of the individual is that in which the person is unconscious for the most part that he is a self, and the ideal of the fullest

and most complete mental development of mankind, its perfect consummation and bliss, is that in which even consciousness lapses.

V.

The traditional opinion entertained of the leading part played by consciousness in mental function has been an insuperable bar to true observation and appreciation of that which the nervous system can and does accomplish of itself without any help of consciousness. Viewing matters from the central standpoint of consciousness it has been impossible to see what, and hard to conceive that anything, takes place outside its light; wherefore it has been thought actually to do the work which it only makes known the doing of: reason is not deemed to be reason at all, although the work of reason be done, unless it is illuminated: what is done without consciousness is denied anything in common with that which is done with consciousness, although the effect, so far as appears, be actually the same. Now what is the fundamental quality of reason? It is essentially the just feeling of a fact or object and the fit reaction to it—the right apprehension or grasping of it; which means in further result the classification of such apprehensions or cognitions where several are possible and the consequent foresight of effect from cause, of means to end, of purposive action. There is not a single living creature which, whether it knows it or not, does not, in so far as it lives and moves and keeps up its being, evince the fundamental quality of reason. Its nervous system, if it possess one, is the mechanism constructed to minister to that function, embodying implicitly in structure that which it displays explicitly in action. As nervous organisations multiply and vary in form with the multiplication and varieties of animals, each form embodies the special sensibilities and motor reactions which subserve the life-interests of the creature possessing it; it is the incorporation of certain limited tracks of implicit reason, which cannot, because of the absence of other nervous tracks, be attended with any reflective consciousness—are necessary, self-sufficing. Instinct means organised experience and is virtually unilluminated reason, unconscious intelligence; while reason is instinct in the making, adaptation in course of accomplishment, a process of *informing* or *information*. Reason might in fact be defined as desire or impulse seeking the *means* of its accomplishment; instinct as the accomplishment of desire or impulse by *means* that are preformed. An instinctive creature is a creature *in-*

formed for its particular functions and without superfluous nervous structure to undergo further formation—a formed, not a forming structure. The skill of the spider and the skill of the juggler have both been acquired in the course of the ages—both represent capitalised experience ; but the skill of the spider involves and uses its entire nervous system, which is framed and set to certain ends, the accomplishment of them being its life of relation, while the skill of the juggler involves only a few tracts of a very complex nervous system, the accomplishment of their function being but a small and incidental event of his life of relation. The one therefore is capable of reflection, the other not ; the one capable of progress in feats of dexterity, the other not.

Reflect on the multitude of varied and admirable instincts displayed by the different living creatures, small and great, in the world, and especially on the remarkably elaborate instincts of the different tribes of insects ; and thereupon conceive them all brought together in one animal by collection and concentration of their different nervous systems within the compass of a single brain ;—would not that composite brain collectively embody a larger and more varied mass of essential reason than a human brain ? the unconscious intelligence of it surpass the conscious intelligence ? Men have learnt much from animals in the past, but that which they have learnt may be little compared with that which they are destined to learn when they obtain better understanding of the natures and operations of these varied and ingenious embodiments of implicit reason.

Certain it is that we find distributed among animals all those qualities which, when we meet with them collectively in man, we attribute to mind—memory, attention, apprehension ; foresight of ends, ingenuity in means and perseverance in the use of them ; courage, anger, distress, envy, revenge, love of kind and parental attachment reaching even to the sacrifice of life ; there is not a single mental quality which man possesses, even to his moral feeling, that we do not find the germ or more or less full display of in one or other class of animals. Nor is there the least reason to suppose that they depend on different causes in him and in them ; what is a sufficient cause in them is a sufficient cause in him ; what nervous structure can do of itself in the one it can do in the other : if animals are, as Descartes thought, machines, it is certain the corresponding machinery in man may do most of his mental work. The admiring surprise which is eternally being expressed anew at the ingenuities of instinct and on the occasions of manifestation of conscious

intelligence in the higher animals, as if the former were not "the fruits of a science of very ancient date,"¹ and no animal except man had any right to display the latter, springs really from the difficulty of stripping the facts of their traditional and disguising vesture of words and of seeing them as they are in their essential nature.

The collective brain in which the varieties of animal nervous organisation are supposed to be gathered and concentrated would, of course, be a very different brain from a human brain; although collected, they would be independent. Moreover, each system has for the most part been specialised to the utmost along the particular lines of its development, and, as it were, stereotyped; wherefore, if it were not separate, it would still be incapable of entering into communion of function for a common end with other systems. In the human brain, on the other hand, the different parts are inter-connected structurally and functionally so as to form one organic whole, and they have the character of plastic forming rather than of rigid formed parts; wherefore, they come into relations of function and develop together in progressive adaptation to surroundings, so working out in the end a fixed mental organisation. The latter, therefore, supplies the physical conditions of consciousness which the former does not. When the human brain has, by a long routine of functions in similar circumstances, grown to certain set forms of feeling, thinking and action, its work is pretty nearly as automatic as the instinct of the animal; indeed, most persons become eventually little better than more or less complex automata.

If we could make the ant and the bee into one animal, by combining their nervous systems and the parts they subserve into one organisation, in which each system should be in intimate functional relation with the other, so that the ant felt and responded to the circumstances of the bee's life, and the bee felt and responded to the circumstances of the ant's

¹ Charles George Leroy, born 1723, the Ranger of Versailles and Marly, and author of the admirable letters written as *Naturalist of Nuremberg*. "It has been proved," he writes, "by incontestable facts that a large portion of the inclinations resulting solely from education, when they have been converted into habits and cultivated for two or three generations successively, become almost hereditary . . . the descendants displaying them from birth." . . . "It is possible, then, that the actions which we see performed by these animals independently of the teachings of experience are the fruits of a science of very ancient date, and that in former times a thousand trials attended with more or less success have finally led to the attainment of the degree of perfection which we see manifested in some of their works of the present day."

life ; and if we could imagine this compound nervous system to be taken at an early and plastic stage, so as to be capable of unity of education to the full extent of the capacities of ant-life and bee-life ; is it not a possible, if not probable, conception that consciousness would occur during its development ? The question might, indeed, be fairly raised, whether a consciousness of some sort did not attend the *forming* of these creatures, which, now that they are fixedly *formed*, has disappeared ; that which was once diffused through the animal kingdom, when developing, being now concentrated and specialised in the complex brain of man, who has by his predominance superseded other lines of development and condemned them to a sterile immobility. It is a vain speculation certainly ; but none the less it is the imagination of a course of events like that which actually takes place now in the human kind when a great genius appears and, gathering up in himself the scattered and sometimes latent lines of human thought and feeling, perceives their relations, combines them into unity of growth, and brings to conscious delivery the silent pulses of the age.

NOTE.—Since this paper was placed in the Editor's hands I have, by his favour, seen Prof. Herzen's exposition of his theory of the conditions of consciousness as set forth in *Les Conditions physiques de la Conscience* (1886, noticed in MIND No. 45, p. 145). Although he therein criticises vigorously the doctrines with respect to consciousness which I have advocated all my life, his main purpose is to set forth and elucidate what he believes to be the physical law of consciousness. Starting from the accepted opinion that there are two phases of every nervous act—first, a decomposition of nervous elements and liberation of energy ; secondly, an immediately following reintegration or reconstitution of their substance and storing up of energy—he maintains that *consciousness never accompanies the integration, but is confined exclusively to the disintegration, of the nerve-substance*. That seems to be to say, in other words, that consciousness accompanies the *function*, but does not accompany the subsequent *nutritive repair* of waste which is no part of the function, although no doubt the condition of future function. One is tempted to ask, in relation to this proposition, whether any one has ever said or thought differently. Meanwhile, no account is taken by Prof. Herzen of the question whether it is the nerve-element itself that undergoes disintegration during function, or whether it is only the material supplied to it from the blood that is consumed in the liberation of energy.

His second proposition is that *the intensity of consciousness is in direct ratio to the intensity of the functional disintegration* ; and his third, that *the intensity of consciousness is in inverse ratio to the facility and rapidity with which each nervous element transmits its disintegration to other nervous elements and enters upon the process of reintegration*.

These three propositions together constitute what he calls *the physical law of consciousness*. Considering the meaning of the two last propositions, I fail to see why Prof. Herzen should find so much fault as he does with what was no doubt a somewhat crude suggestion of mine made many years

ago with regard to the conditions of consciousness—namely, that in order to have a consciousness of an idea it is necessary, not only that the idea should have a certain intensity, but that its energy should not be discharged entirely and instantly upon the organs of movement. What does the intensity of the idea in such case mean, but the intensity of the disintegration, which is Prof. Herzen's own alleged condition of the intensity of consciousness? And as regards the third proposition, may not diversion of energy be one, if not a main, condition of a slow and difficult transmission through the nervous centres? Be that as it may, however, he differs clearly in maintaining positively, as he does, that the conscious and the unconscious coexist everywhere and always, whatever the nervous centre in action, at one time the one predominating and at another time the other. Thus he attributes even to the spinal cord an *elementary, impersonal, unintelligent consciousness* which is at its maximum in the lower animals, at its minimum in the higher animals. Here, however, it is not quite easy to follow his arguments, since his language does not seem to be always consistent; while he declares plainly that consciousness exists always and everywhere ("le conscient et l'inconscient *coexistent toujours et partout*"), he acknowledges that no appeal is made to the spinal consciousness ("il n'est point fait appel à la conscience spinale") in those acts that are performed automatically by the spinal cord. The conscious is there, but it is not appealed to: in other words, although the conscious always coexists with the unconscious, it exists sometimes in the form of the unconscious! But if it is there and makes no sign, how can we know that it is there at all? Are we not entitled to conclude in such case that 'de non apparentibus et de non existentibus eadem est ratio'?

It is impossible, however, in a note to do justice to the facts and arguments by which Prof. Herzen elucidates and supports his theory. Any one who may read the foregoing paper would do well to study them for himself. So far as they are well-grounded they will serve to correct or confute the opinions which I have propounded, while these in their turn may serve perhaps to show forth the weak points of his theory. To me it seems that he has left a great deal of essential matter out of consideration, not having seemingly realised that there is a twofold *synthesis* or combination to be taken account of in the physiology of our mental life—first, the combination of elements to constitute nerve-substance, on which he does lay stress; second, a combination or union of nervous plexuses to accomplish different functions—their physiological catenation, so to speak, whereby the manifold morphological patterns are formed that become the nervous substrata of the various functions or faculties of mind, so building up the complex and intricate structure of the mental organisation.

II.—THE PERCEPTION OF SPACE. (IV.)¹

By Professor WILLIAM JAMES.

5. *The Intellectualist Theory of Space (continued).*

LET me remind the reader of where we left off. I had spoken of the difference which frequently obtains between the form and size of an optical sensation and the form and size of the reality which it suggests; and I had tried to make it clear that, in all common cases, the form and size which we attribute to the reality mean nothing more than certain other optical sensations, now absent, but which would be present under different conditions of observation. I then referred to a residual class of cases on which much stress is laid by such authors as Helmholtz and Wundt. These are cases of *illusion*, cases in which a *presented* form and size are not felt at all, the only thing cognised being what these authors consider to be a demonstrably *inferred* form and size. Were the presented form and size themselves sensations, the authors say, they could not be annulled by inferences; no instance of the suppression of a real sensation by the inferred image of an absent one being known.

I am utterly unconvinced of the truth of this thesis, and of the theory which would explain most of the illusions in point by inferences unconsciously performed. But profitably to conduct the discussion we must divide the alleged instances into groups.

(a) With Helmholtz, *colour-perception* is equally with space-perception an intellectual affair. The so-called simultaneous colour-contrast, by which one colour modifies another alongside of which it is laid, is explained by him as an unconscious inference. This chapter on space is not for the discussion of the colour-contrast problem; but I mention it here, because maybe the principles which apply to its solution will prove also applicable to part of our own problem. Hering's treatment of colour-contrast seems, in fact, to have conclusively convicted Helmholtz of error. In my opinion, Hering has definitely proved that, when one colour is laid beside another, it modifies the sensation of the latter, not by virtue of any mere mental suggestion, as Helmholtz would have it,

¹ Concluded from MIND, Nos. 45, 46, 47.

but by actually exciting a new nerve-process, to which the modified feeling of colour immediately corresponds. The explanation is physiological, not psychological. The transformation of the original colour by the inducing colour is due to the disappearance of the physiological conditions under which the first colour was produced, and to the induction, under the new conditions, of a genuine new sensation, with which the "suggestions of experience" have naught to do.

That processes in the visual apparatus propagate themselves laterally, if one may so express it, is also shown by the phenomena of contrast which occur after looking upon motions of various kinds. Here are a few examples. If, over the rail of a moving vessel, we look at the water rushing along the side, and then transfer our gaze to the deck, a band of planks will appear to us, moving in the opposite direction to that in which, a moment previously, we had been seeing the water move, whilst on either side of this band another band of planks will move as the water did. Looking at a waterfall, or at the road from out of a car-window in a moving train, produces the same illusion, which may be easily verified in the laboratory by a simple piece of apparatus. A board with a window five or six inches wide and of any convenient length, is supported upright on two feet. On the back side of the board, above and below the window, are two rollers, one of which is provided with a crank. An endless band of any figured stuff is passed over these rollers (one of which can be so adjusted on its bearings as to keep the stuff always taut and not liable to slip), and the surface of the front board is also covered with stuff or paper of a nature to catch the eye. Turning the crank now sets the central band in continuous motion, whilst the margins of the field remain really at rest, but after a while appear moving in the contrary way. Stopping the crank results in an illusory appearance of motion in reverse directions all over the field.

A disc with an Archimedean spiral drawn upon it, whirled round on an ordinary rotating machine, produces still more startling effects. "If the revolution is in the direction in which the spiral line approaches the centre of the disc the entire surface of the latter seems to expand during revolution and to contract after it has ceased; and *vice versa* if the movement of revolution is in the opposite direction. If in the former case the eyes of the observers are turned from the rotating disc towards any familiar object—*e.g.*, the face of a friend—the latter seems to contract or recede in a

somewhat striking manner, and to expand or approach after the opposite motion of the spiral."¹

An elementary form of these motor illusions seems to be the one described by Helmholtz on pp. 568-571 of his *Optik*. The motion of anything in the field of vision along an acute angle towards a straight line, sensibly distorts that line.

Fig. 11.



Thus in Fig. 11: Let AB be a line drawn on paper, CDE the tracing made over this line by the point of a compass steadily followed by the eye, as it moves. As the compass-point passes from C to D, the line appears to move downwards; as it passes from D to E, the line appears to move upwards; at the same time the whole line seems to incline itself in the direction FG during the first half of the compass's movement; and in the direction HI during its last half; the change from one inclination to another being quite distinct as the compass-point passes over D.

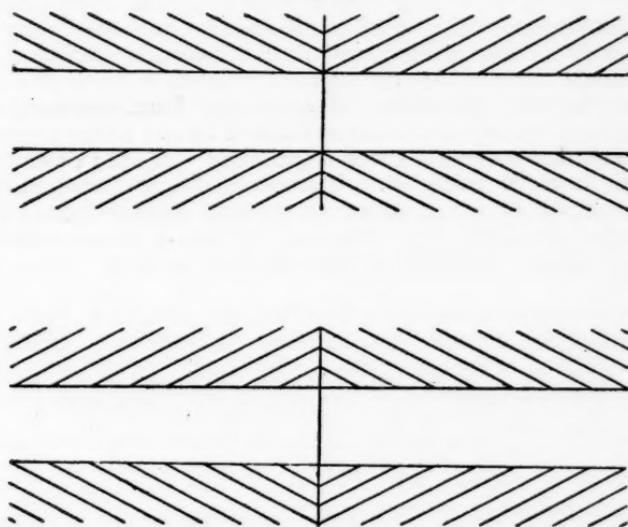
Any line across which we draw a pencil-point appears to be animated by a rapid movement of its own towards the pencil-point. This apparent movement of both of two things in relative motion to each other, even when one of them is absolutely still, reminds us of the instances quoted from Vierordt on page 188, and seems to take us back to a primitive stage of perception, in which the discriminations we now make when we feel a movement have not yet been made. If we draw the point of a pencil through 'Zöllner's pattern' (Fig. 7, p. 343), and follow it with the eye, the whole figure becomes the scene of the most singular apparent unrest, of which Helmholtz has very carefully noted the conditions. The illusion of Zöllner's figure vanishes entirely, or almost

¹ Bowditch and Hall, in *Journal of Physiology*, vol. iii., p. 299. Helmholtz tries to explain this phenomenon by unconscious rotations of the eyeball. But movements of the eyeball can only explain such appearances of movement as are the same over the whole field. In the windowed board one part of the field seems to move in one way, another part in another. The same is true when we turn from the spiral to look at the wall—the centre of the field alone swells out or contracts, the margin does the reverse or remains at rest. Mach and Dvorak have beautifully proved the impossibility of eye-rotations in this case (*Sitzungsber. d. Wiener Akad.* Bd. Ixi.). See also Bowditch and Hall's paper as above, p. 300.

so, with most people, if they steadily look at one point of it with an unmoving eye; and the same is the case with many other illusions.

Now all these facts taken together seem to show—vaguely it is true, but certainly—that present excitements and after-effects of former excitements may alter the result of processes occurring simultaneously at a distance from them in the retina or other portions of the apparatus for optical sensation. In the cases last considered, the moving eye, as it sweeps the fovea over certain parts of the figure, seems thereby to determine a modification in the feeling which the *other* parts confer, which modification is the figure's 'distortion'. It is true that this statement explains nothing. It only keeps the cases to which it applies from being explained spuriously. The spurious account of these illusions is that they are intellectual, not sensational. The distorted figure is said to be one which the mind is led to *imagine*, by falsely drawing an unconscious inference from certain premisses of which it is not distinctly aware. And the imagined figure is supposed to be strong enough to suppress the perception of whatever real sensations there may be. But Helmholtz, Wundt, Delboeuf, Zöllner, and all the advocates of unconscious inference are at variance with each other when it comes to the question what these unconscious premisses and inferences may be.

Fig. 12



That small angles look proportionally larger than larger ones is, in brief, the fundamental illusion to which almost all authors would reduce the peculiarity of Fig. 12, as of Figs. 7, 8, 9 (pp. 343, 344). This peculiarity of small angles is by Wundt treated as the case of a filled space seeming larger than an empty one as in Fig. 13; and this, according

Fig. 13.



to both Delboeuf and Wundt, is owing to the fact that more muscular innervation is needed for the eye to traverse a filled space than an empty one, because the points and lines in the filled space inevitably arrest and constrain the eye, and this makes us feel as if it were doing more work, *i.e.*, traversing a longer distance.¹ When, however, we recollect that muscular movements are positively proved to have *no* share in the waterfall and revolving-spiral illusions, and that it is hard to see how Wundt's and Delboeuf's particular form of muscle-explanation can possibly apply to the compass-point illusion considered a moment ago, we must conclude that these writers have probably exaggerated, to say the least, the reach of their muscle-explanation in the case of the subdivided angles and lines. Never do we get such strong muscular feelings as when, against the course of nature, we oblige our eyes to be still; but fixing the eyes on one point of the figure, so far from making that part of the latter seem larger, dispels, in most persons, the illusion of these diagrams altogether. As for Helmholtz, he invokes, to explain the enlargement of small angles,² what he calls a "law of contrast" between directions and distances of lines, analogous to that between colours and intensities of light. Lines cutting another line make the latter seem more inclined away from them than it really is. Moreover, clearly recognisable magnitudes appear greater than equal magnitudes which we but vaguely apprehend. But this is surely a sensationalistic law, a native function of our seeing-apparatus. Quite as little as the negative after-image of the revolving-spiral could such contrast be deduced from any association of ideas or recall of past objects. The principle of contrast is criticised by Wundt,³ who says that by it small spaces ought to appear to us smaller, and not larger, than they really are.

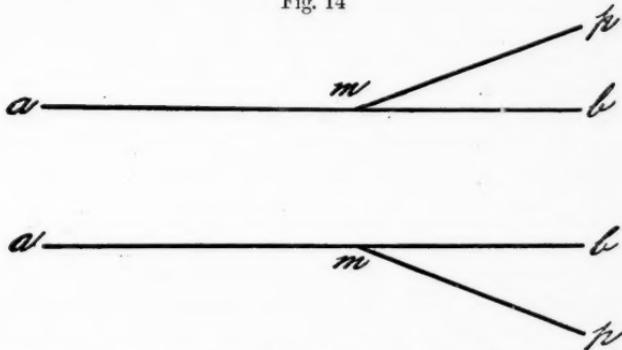
¹ *Bulletins de l'Acad. de Belgique*, xix., 2, *Revue Philosophique*, vi., pp. 223-5; *Physiologische Psychologie*, 2te Aufl., p. 103.

² *Physiol. Optik*, pp. 562-71.

³ *Physiol. Psych.*, pp. 107-8.

Helmholtz might have retorted (had not the retort been as fatal to the uniformity of his own principle as to Wundt's) that if the muscle-explanation were true, it ought not to give rise to just the opposite illusions in the skin. We saw on p. 7 that subdivided spaces appear shorter than empty ones upon the skin. To the instances there given, add this:—Divide a line on paper into equal halves, puncture the extremities, and make punctures all along one of the halves; then, with the finger-tip on the opposite side of the paper, follow the line of punctures; the empty half will seem much longer than the punctured half. This seems to bring things back to unanalysable laws, by reason of which our feeling of size is determined differently in the skin and in the retina, even when the objective conditions are the same. Hering's explanation of Zöllner's figure is to be found in Hermann's *Handb. d. Physiologie*, iii. 1, p. 579. Lipps¹ gives another reason why lines cutting another line make the latter seem to bend away from them more than is really the case. If, he says, we draw (Fig. 14) the line pm upon the line ab , and follow the latter with our eye, we shall, on reaching the point m , tend for a moment to slip off ab and to follow mp , without distinctly realising that we are not still on the main line. This makes us feel as if the remainder mb of the main line were bent a little away from its original direction. The illusion is apparent in the shape of a seeming

Fig. 14



approach of the ends b, b , of the two main lines. This to my mind would be a more satisfactory explanation of this class of illusions than any of those given by previous authors, were it not again for what happens in the skin.

¹ *Grundtatsachen des Seelenlebens*, pp. 526-30.

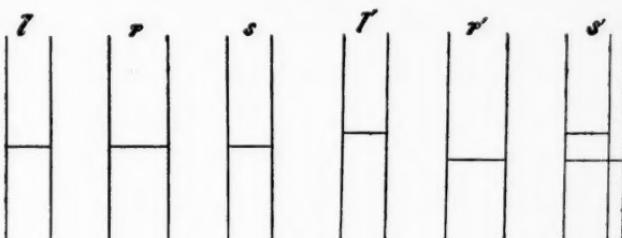
Considering all the circumstances, I feel entirely justified in discarding this entire batch of illusions as irrelevant to our present inquiry. Whatever they may prove, they do not prove that our visual percepts of form and movement may not be sensations strictly so called. They much more probably fall into line with the phenomena of irradiation and of colour-contrast, and with Vierordt's primitive illusions of movement. They show us, if anything, a realm of sensations in which our habitual experience has not yet made traces, and which persist in spite of our better knowledge, unsuggestive of those other space-sensations which we all the time know from extrinsic evidence to constitute the real space-determinations of the diagram. Very likely, if these sensations were as frequent and as practically important as they now are insignificant and rare, we should end by substituting their significates—the real space-values of the diagrams—for them. These latter we should then seem to see directly, and the illusions would disappear like that of the size of a tooth-socket when the tooth has been out a week.

(b) Another batch of cases which we may discard is that of *double images*. A thoroughgoing anti-sensationalist ought to deny all native tendency to see double images when disparate retinal points are stimulated, because, he would say, most people never get them, but *see* all things single which experience has led them to believe to *be* single. ‘Can a doubleness, so easily neutralised by our knowledge, ever be a datum of sensation at all?’ such an anti-sensationalist might ask.

To which the answer is that it *is* a datum of sensation, but a datum which, like many other data, must first be *discriminated*. As a rule, no sensible qualities are discriminated without a motive. And those that later we learn to discriminate were originally felt confused. As well pretend that a voice, or an odour, which we have learned to pick out, is no sensation now. One may easily acquire skill in discriminating double images, though, as Hering somewhere says, it is an art of which one cannot become master in one year or in two. For masters like Hering himself, or Leconte, the ordinary stereoscopic diagrams are of little use. Instead of combining into one solid appearance, they simply cross each other with their doubled lines. Volkmann has shown a great variety of ways in which the addition of secondary lines, differing in the two fields, helps us to see the

primary lines double. The effect is analogous to that in the cases we despatched a moment ago, where given lines have their space-value changed by the addition of new lines, without our being able to say why, except that a certain mutual adhesion of the lines and modification of the resultant feeling takes place by psycho-physiological laws. Thus, if in Fig. 15 l and r be crossed by an horizontal at the

Fig. 15.



same level, and viewed stereoscopically, they appear as a single pair of lines, s , in space. But if the horizontal be at different levels, as in l' , r' , three lines appear, as in s' .¹

Let us then say no more about double images. All that the facts prove is what Volkmann says,² that, although there may be sets of retinal fibres so organised as to give an impression of two separate spots, yet the excitement of other retinal fibres may inhibit the effect of the first, and prevent us from actually making the discrimination. Still further retinal processes may, however, bring the doubleness to the eye of attention; and, once there, it is as genuine a sensation as any that our life affords.³

(c) These groups of illusions being eliminated, either as cases of defective discrimination, or as changes of one space-sensation into another when the total retinal process changes, there remain but two other groups to puzzle us. The first is that of the after-images distorted by projection

¹ See *Archiv. f. Ophthalm.*, v. 2, 1 (1859), where many more examples are given.

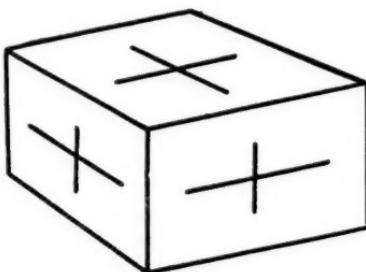
² *Untersuchungen*, p. 250; see also p. 242.

³ I pass over certain difficulties about double images, drawn from the perceptions of a few squinters (e.g., by Schweigger, *Klin. Untersuch. über das Schielen*, Berlin, 1881; by Javal, *Annales d'Oculistique*, lxxxv., p. 217), because the facts are exceptional at best and very difficult of interpretation. In favour of the sensationalistic or nativistic view of one such case, see the important paper by Von Kries, *Archiv. f. Ophthalm.*, xxiv. 4, p. 117.

on to oblique planes ; the second relates to the instability of our judgments of relative distance and size by the eye, and includes especially what are known as pseudoscopic illusions.

The phenomena of the first group were described on page 342. A. W. Volkmann has studied them with his accustomed clearness and care.¹ Even an imaginarily inclined wall, in a picture, will, if an after-image be thrown upon it, distort the shape thereof, and make us see a form of which our after-image would be the natural projection on the retina, were that form laid upon the wall. Thus a signboard is painted in perspective on a screen, and the eye, after steadily looking at a rectangular cross, is turned to the painted signboard. The after-image appears as an oblique-legged cross upon the signboard. It is the converse phenomenon of a perspective drawing like Fig. 16, in which really oblique-legged figures are seen as rectangular crosses.

Fig. 16.

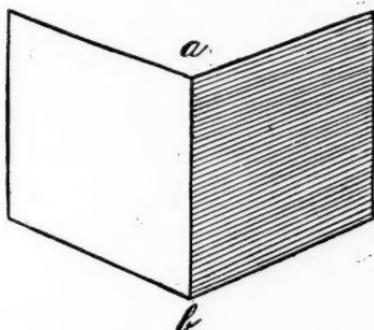


The unstable judgments of relative distance and size were also mentioned on p. 342. Whatever the size may be of the retinal image which an object makes, the object is seen as of its own normal size. A man moving towards us is not sensibly perceived to grow, for example; and my finger, of which a single joint may more than conceal him from my view, is nevertheless seen as a much smaller object than the man. As for distances, it is often possible to make the farther part of an object seem near and the nearer part far. An human profile in intaglio, looked at steadily with one eye, or even both, soon appears irresistibly as a bas-relief. The inside of a common pasteboard mask, painted like the outside, and viewed with one eye in a direct light, also looks convex instead of hollow. So strong is the illusion, after long fixation, that a friend who painted such a mask for me

¹ *Physiologische Untersuchungen im Gebiete der Optik*, v.

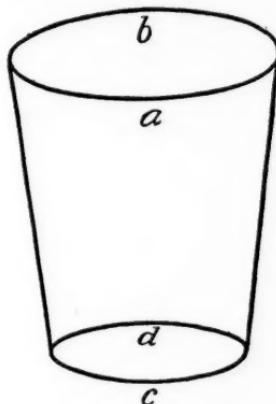
told me it soon became difficult to see how to apply the brush. Bend a visiting card across the middle, so that its halves form an angle of 90° more or less; set it upright on the table, as in Fig. 17, and view it with one eye. You can

Fig. 17.



make it appear either as if it opened towards you or away from you. In the former case, the angle ab lies upon the table, b being nearer to you than a ; in the latter case ab seems vertical to the table—as indeed it really is¹—with a nearer to you than b . Again, look, with either one or two eyes, at the opening of a wine-glass or tumbler (Fig. 18), held either above or below the eye's level. The retinal image of

Fig. 18.



¹ Cp. E. Mach, *Beiträge zur Analyse der Empfindungen*, p. 87.

the opening is an oval, but we can see the oval in either of two ways,—as if it were the perspective view of a circle whose edge *b* were farther from us than its edge *a* (in which case we should seem to be looking down on the circle), or as if its edge *a* were the more distant edge (in which case we should be looking up at it through the *b* side of the glass). As the manner of seeing the edge changes, the glass itself alters its form in space and looks straight or seems bent towards or from the eye,¹ according as the latter is placed beneath or above it.

Plane diagrams also can be conceived as solids, and that in more than one way. Figs. 19, 20, 21, for example, are ambiguous perspective projections, and may each of them remind

Fig. 19.

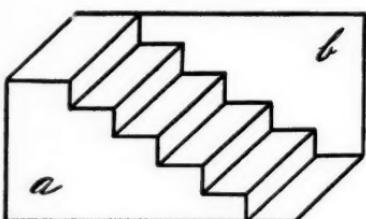


Fig. 20.

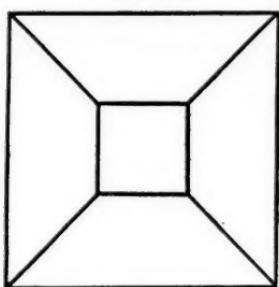
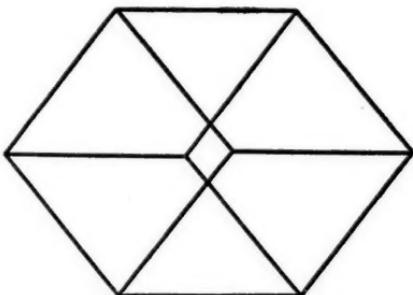


Fig. 21.



us of two different natural objects. Whichever of these objects we conceive clearly at the moment of looking at the figure, we seem to *see* in all its solidity before us. A little practice will enable us to flap the figures, so to speak, backwards and forwards from one object to the other at will.

¹ Cp. V. Egger, *Revue Philos.*, xx. 488.

We need only attend to one of the angles represented, and imagine it either solid or hollow—pulled towards us out of the plane of the paper, or pushed back behind the same—and the whole figure obeys the cue and is instantaneously transformed beneath our gaze.

The peculiarity of all these cases is the ambiguity of the perception to which the fixed retinal impression gives rise. With our retina excited in exactly the same way, whether by after-image, mask or diagram, we *see* now this object and now that, as if the retinal image *per se* had no essential space-import. Surely if form and length were originally retinal sensations, retinal rectangles ought not to become acute or obtuse, and lines ought not to alter their relative lengths as they do. If *relief* were an optical feeling, it ought not to flap to and fro, with every optical condition unchanged. Here, if anywhere, the deniers of space-sensation ought to be able to make their final stand.¹

It must be confessed that their plea is plausible at first sight. But it is one thing to throw out retinal sensibility altogether as a space-yielding function the moment we find an ambiguity in its deliverances, and another thing to examine candidly the conditions which may have brought the ambiguity about. The former way is cheap, wholesale, shallow; the latter difficult and complicated, but full of instruction in the end. Let us try it for ourselves.

In the case of the diagrams 17, 18, 19, 20, 21, the real object, lines meeting or crossing each other on a plane, is replaced by an *imagined* solid, which we describe as *seen*. Really it is not *seen*, but only so vividly conceived as to approach a vision of reality. We feel all the while, however, that the solid suggested is not solidly there. The reason why one solid may seem more easily suggested than another, and why it is easier in general to perceive the diagram solid than flat, seems due to *probability*.² Those lines have countless times in our past experience been drawn on our retina by solids for once that we have seen them flat on paper. And hundreds of times we have looked down upon the upper surface of parallelopipeds, stairs and glasses, for once that

¹ The strongest passage in Helmholtz's argument against sensations of space is relative to these fluctuations of seen relief: "Ought one not to conclude that if sensations of relief exist at all, they must be so faint and vague as to have no influence compared with that of past experience? Ought we not to believe that the perception of the third dimension may have arisen *without* them, since we now see it taking place as well *against* them as *with* them?" (*Physiol. Optik.*, p. 817).

² Cp. E. Mach, *Beiträge*, &c., p. 90.

we have looked upwards at their bottom—hence we see the solids easiest as if from above.

Habit or probability seems also to govern the illusion of the intaglio profile, and of the hollow mask. We have *never* seen a human face except in relief—hence the ease with which the present sensation is overpowered. Hence, too, the obstinacy with which human faces and forms, and other extremely familiar convex objects, refuse to appear hollow when viewed through Wheatstone's pseudoscope. Our perception seems wedded to certain total ways of seeing certain objects. The moment the object is suggested at all, it takes possession of the mind in the fullness of its stereotyped habitual form. This explains the suddenness of the transformations when the perceptions change. The object shoots back and forth completely from this to that familiar thing, and doubtful, indeterminate and composite things are excluded, apparently because we are *unused* to their existence.

When we turn from the diagrams to the actual folded visiting-card and to the real glass, the imagined form seems fully as real as the correct one. The card flaps over; the glass rim tilts this way or that, as if some inward spring suddenly became released in our eye. In these changes the actual retinal image receives different *complements from the mind*. But the remarkable thing is that the complement and the image combine so completely that the twain are one flesh, as it were, and cannot be discriminated in the result. If the complement be, as we have called it (on p. 348), a set of imaginary absent eye-sensations, they seem no whit less vividly there than the sensation the eye now receives from without.

The case of the after-images distorted by projection upon an oblique plane is even more strange, for the imagined perspective figure, lying in the plane, seems less to combine with the one a moment previously seen by the eye, than to suppress it and take its place.¹ The point needing explanation, then, in all this is how it comes to pass that, when imagined sensations are usually so inferior in vivacity to real ones, they should in these few experiences prove to be almost or quite their match.

¹ I ought to say that I seem always able to see the cross rectangular at will. But this appears to come from an imperfect absorption of the rectangular after-image by the inclined plane at which the eyes look. The cross, with me, is apt to detach itself from this and then look square. I get the illusion better from the circle, whose after-image becomes in various ways elliptical on being projected upon the different surfaces of the room, and cannot then be easily made to look circular again.

The mystery is solved when we note the class to which all these experiences belong. They are 'apperceptions' of definite 'things,' definitely situated in tridimensional space. The mind uniformly uses its sensations to *identify things by*. The sensation is invariably apperceived by the idea, name or 'normal' aspect (p. 349) of the *thing*. The peculiarity of the *optical* signs of things is their extraordinary mutability. A 'thing' which we follow with the eye, never doubting of its physical identity, will change its retinal image incessantly. A cross, a ring, waved about in the air, will pass through every conceivable angular and elliptical form. All the while, however, as we look at them, we hold fast to the perception of their 'real' shape, by mentally combining the pictures momentarily received with the notion of peculiar positions in space. It is not the cross and ring pure and simple which we perceive, but the cross *so held*, the ring *so held*. From the day of our birth we have sought every hour of our lives to *correct* the apparent form of things, and translate it into the real form by keeping note of the way they are placed or held. In no other class of sensations does this incessant correction occur. What wonder, then, that the notion 'so placed' should invincibly exert its habitual corrective effect, even when the object with which it combines is only an after-image, and make us perceive the latter under a changed but more 'real' form? The 'real' form is also a sensation conjured up by memory; but it is one so *probable*, so *habitually* conjured up when we have just this combination of optical experiences, that it partakes of the invincible freshness of reality, and seems to break through that law which elsewhere condemns reproductive processes to being so much fainter than sensations.

Once more, these cases form an extreme. *Somewhere*, in the list of our imaginations of absent feelings, there must be found the *vividest* of all. These optical reproductions of real form *are* the *vividest* of all. It is foolish to reason from cases lower in the scale, to prove that the scale can contain no such extreme cases as these; and particularly foolish since we can definitely see why these imaginations ought to be more vivid than any others, whenever they recall the forms of habitual and probable things. These latter, by incessantly repeated presence and reproduction, will plough deep grooves in the nervous system. There will be developed, to correspond to them, paths of least resistance, of unstable equilibrium, liable to become active in their totality when any point is touched off. Even when the objective stimulus is imperfect, we shall still *see* the full convexity of

a human face, the correct inclination of an angle or sweep of a curve, or the distance of two lines. Our mind will be like a polyhedron, with facets, attitudes of perception in which it can most easily rest. These are worn upon it by *habitual* objects, and from one of these it can pass only by tumbling over into another.

Hering has well accounted for the sensationally vivid character of these habitually reproduced forms. He says, after reminding us that every visual sensation is correlated to a physical process in the nervous apparatus :—

“ If this psychophysical process is aroused, as usually happens, by light-rays impinging on the retina, its form depends not only on the nature of these rays, but on the constitution of the entire nervous apparatus which is connected with the organ of vision, and on the *state* in which it finds itself. The same stimulus may excite widely different sensations according to this state.

“ The constitution of the nervous apparatus depends naturally in part upon innate predisposition ; but the *ensemble* of effects wrought by stimuli upon it in the course of life, whether these come through the eyes or from elsewhere, is a co-factor of its development. To express it otherwise, involuntary and voluntary experience and exercise assist in determining the material structure of the nervous organ of vision, and hence the ways in which it may react on a retinal image as an outward stimulus. That experience and exercise should be possible at all in vision is a consequence of the reproductive power, or memory, of its nerve-substance. Every particular activity of the organ makes it more suited to a repetition of the *same*; ever slighter touches are required to make the repetition occur. The organ habituates itself to the repeated activity. . . .

“ Suppose now that, in the first experience of a complex sensation produced by a particular retinal image, certain portions were made the special objects of attention. In a repetition of the sensible experience it will happen that notwithstanding the identity of the outward stimulus these portions will be more easily and strongly reproduced ; and when this happens a hundred times the inequality with which the various constituents of the complex sensation appeal to consciousness grows ever greater.

“ Now in the present state of our knowledge we cannot assert that in both the first and the last occurrence of the retinal image in question the same *pure sensation* is provoked, but that the mind *interprets* it differently the last time in consequence of experience ; for the only *given* things we know are on the one hand the retinal image which is both times the same, and on the other the mental percept which is both times different ; of a third thing, such as a pure sensation, interpolated between image and percept, we know nothing. We ought therefore, if we wish to avoid hypotheses, simply to say that the nervous apparatus reacts the last time differently from the first, and gives us in consequence a different group of sensations.

“ But not only by repetition of the same retinal image, but by that of similar ones, will the law obtain. Portions of the image common to the successive experiences will awaken, as it were, a stronger echo in the nervous apparatus than other portions. Hence it results that *reproduction is usually elective*: the more strongly reverberating parts of the picture yield stronger feelings than the rest. This may result in the latter being quite overlooked and, as it were, eliminated from perception. It may even

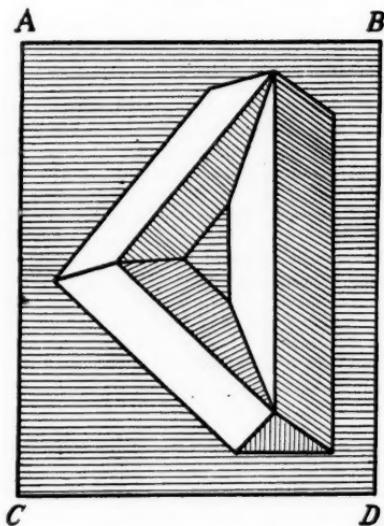
come to pass that instead of these parts eliminated by election a feeling of entirely different elements comes to consciousness—elements not objectively contained in the stimulus. A group of sensations namely, for which a strong tendency to reproduction has become, by frequent repetition, ingrained in the nervous system will easily revive as a *whole* when not its whole retinal image, but only an essential part thereof, returns. In this case we get some sensations to which no adequate stimulus exists in the retinal image, and which owe their being solely to the reproductive power of the nervous apparatus. This is *complementary (ergänzende)* reproduction.

"Thus a few points and disconnected strokes are sufficient to make us see a human face, and without specially directed attention we fail to note that we see much that really is not drawn on the paper. Attention will show that the outlines were deficient in spots where we thought them complete. . . . The portions of the percept supplied by complementary reproduction depend however, just as much as its other portions, on the reaction of the nervous apparatus upon the retinal image, indirect though this reaction may, in the case of the supplied portions, be. And so long as they are present, we have a perfect right to call them sensations, for they differ in no wise from such sensations as correspond to an actual stimulus in the retina. Often, however, they are not persistent; many of them may be expelled by more close observation, but this is not proved to be the case with all. . . . In vision with one eye . . . the distribution of parts within the third dimension is essentially the work of this complementary reproduction, *i.e.*, of former experience. . . . When a certain way of localising a particular group of sensations has become with us a second nature, our better knowledge, our judgment, our logic, are of no avail. . . . Things actually diverse may give similar or almost identical retinal images; *e.g.*, an object extended in three dimensions, and its flat perspective picture. In such cases it often depends on small accidents, and especially on our will, whether the one or the other group of sensations shall be excited. . . . We can see a relief hollow, as a mould, or *vice versa*; for a relief illuminated from the left can look just like its mould illuminated from the right. Reflecting upon this, one may infer from the direction of the shadows that one has a relief before one, and the idea of the relief will guide the nerve-processes into the right path, so that the *feeling* of the relief is suddenly aroused. . . . Whenever the retinal image is of such a nature that two diverse modes of reaction on the part of the nervous apparatus are, so to speak, equally, or nearly equally, imminent, it must depend on small accidents whether the one or the other reaction is realised. In these cases our previous knowledge often has a decisive effect, and helps the correct perception to victory. The bare idea of the right object is itself a feeble reproduction which with the help of the proper retinal picture develops into clear and lively sensation. But if there be not already in the nervous apparatus a disposition to the production of that percept which our judgment tells us is right, our knowledge strives in vain to conjure up the feeling of it; we then know that we see something to which no reality corresponds, but we see it all the same" (*Hermann's Handb. der Physiologie*, iii. 1, pp. 565-71).

Note that no object not *probable*, no object which we are not incessantly practised in reproducing, can acquire this vividness in imagination. Objective corners are ever changing their angles to the eyes, spaces their apparent size, lines their distance. But by no transmutation of position in space does an objective straight line appear bent, and only in one

position out of an infinity does a broken line look straight. Accordingly, it is impossible by projecting the after-image of a straight line upon two surfaces which make a solid angle with each other to give the line itself a sensible 'kink'. Look with it at the corner of your room : the after-image, which may overlap all three surfaces of the corner, still continues straight. Volkmann constructed a complicated surface of projection like that drawn in Fig. 22, but he found it impossible so to throw a straight after-image upon it as to alter its visible form.

Fig. 22.

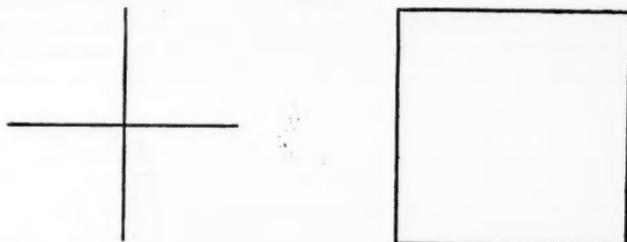


One of the situations in which we oftenest see things is spread out on the ground before us. We are incessantly drilled in making allowance for *this* perspective, and reducing things to their real form in spite of optical foreshortening. Hence if the preceding explanations are true, we ought to find this habit inveterate. The *lower* half of the retina, which habitually sees the *further* half of things spread out on the ground, ought to have acquired a habit of enlarging its pictures by imagination, so as to make them more than equal to those which fall on the upper retinal surface ; and this habit ought to be hard to escape from, even when both halves of the object are equi-distant from the eye, as in a vertical line on paper. Delboeuf has found accordingly, that if we

try to bisect such a line we place the point of division about $\frac{1}{16}$ of its length too high.¹

Similarly, a square cross, or a square, drawn on paper, should look higher than it is broad. And that this is actually the case, the reader may verify by a glance at Fig. 23.

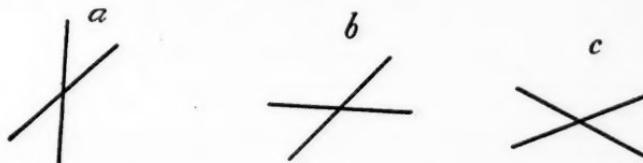
Fig. 23.



For analogous reasons the upper and lower halves of the letter S, or of the figure 8, hardly seem to differ. But when turned upside down, as S, 8, the upper half looks much the larger.²

Hering has tried to explain our exaggeration of small angles in the same way. We have more to do with right angles than with any others. Consequently obtuse and acute ones, equally liable to be the images of right ones foreshortened, particularly easily revive right ones in memory. It is hard to look at such figures as *a*, *b*, *c*, in Fig. 24, without seeing

Fig. 24.



¹ *Bulletins de l'Académie de Belgique*, 2me Série, xix. 2.

² Wundt seeks to explain all these illusions by the relatively stronger "feeling of innervation" needed to move the eyeballs upwards,—a careful study of the muscles concerned is taken to prove this,—and a consequently greater estimate of the distance traversed. It suffices to remark, however, with Lipps, that were the innervation all, a column of S's placed on top of each other should look each larger than the one below it, and a weather-cock on a steeple gigantic, neither of which is the case. Only the halves of the same object look different in size, because the customary correction for foreshortening bears only on the relations of the parts of special things spread out before us. Cp. W. Wundt, *Physiol. Psych.*, 2te Aufl., ii. 96-8; Th. Lipps, *Grundtatsachen*, &c., p. 535.

them in perspective, as approximations, at least, to foreshortened rectangular forms.¹

At the same time the genuine sensational form of the lines before us can, in all the cases of distortion by suggested perspective, be felt correctly by a mind able to abstract from the notion of perspective altogether. Individuals differ in this abstracting power. Artistic training improves it, so that after a little while errors in vertical bisection, in estimating height relatively to breadth, &c., become impossible. In other words, we learn to take the optical sensation before us *pure*.²

We may then sum up our study of illusions by saying that they in no wise undermine our view, that every spatial determination of things is originally given in the shape of a sensation of the eyes. They only show how very potent certain *imagined* sensations of the eyes may become.

These sensations, so far as they bring definite forms to the mind, appear to be retinal exclusively. The movements of the eyeballs play a great part in educating our perception, it is true; but they have nothing to do with *constituting* any one feeling of form. Their function is limited to *exciting* the various feelings of form, by tracing retinal streaks; and to *comparing* them, and *measuring* them off against each other, by applying different parts of the retinal surface to the same objective thing. Helmholtz's analysis of the facts of our '*measurement of the field of view*' is, bating a lapse or two, masterly, and seems to prove that the movements of the eye have had some part in bringing our sense of retinal

¹ Hering would partly solve in this way the mystery of Figs. 7, 8, and 12. No doubt the explanation partly applies; but the strange cessation of the illusion when we fix the gaze fails to be accounted for thereby.

² Helmholtz has sought (*Physiol. Optik*, p. 715) to explain the divergence of the apparent vertical meridians of the two retinae, by the manner in which an identical line drawn on the ground before us in the median plane will throw its images on the two eyes respectively. The matter is too technical for description here; the unlearned reader may be referred for it to J. Leconte's *Sight* in the Internat. Scient. Series, p. 198 ff. But for the benefit of those to whom *verbum sat*, I cannot help saying that it seems to me the *exactness* of the relation of the two meridians—whether divergent or not, for their divergence differs in individuals and often in one individual at diverse times—precludes its being due to the mere habitual falling-off of the image of one objective line on both. Leconte, e.g., measures their position down to a sixth of a degree, others to tenths. This indicates an organic identity in the sensations of the two retinae, which the experience of median perspective horizontals may roughly have agreed with, but hardly can have engendered. Wundt explains the divergence, as usual, by the *Innervationsgefühl* (*op. cit.* ii. 99 ff.).

equivalencies about—*equivalencies*, mind, of different retinal forms and sizes, not forms and sizes themselves. *Superposition* is the way in which the eye-movements accomplish this result. An object traces the line AB on a peripheral tract of the retina. Quickly we move the eye so that the same object traces the line *ab* on a central tract. Forthwith, to our mind, AB and *ab* are judged equivalent. But, as Helmholtz admits, the equivalence-judgment is independent of the way we may feel the form and length of the several retinal pictures themselves:

"The retina is like a pair of compasses, whose points we apply in succession to the ends of several lines to see whether they agree or not in length. All we need know meanwhile about the compasses is that the distance of their points remains unchanged. What that distance is, and what is the shape of the compasses, is a matter of no account" (*Physiol. Optik.* p. 547).

Measurement implies a stuff to measure. Retinal sensations give the stuff; objective things form the yard-stick; motion does the measuring operation; which can, of course, be well performed only where it is possible to make the same object fall on many retinal tracts. This is practically impossible where the tracts make a wide angle with each other. But there are certain directions in the field of view, certain retinal lines, along which it is particularly easy to make the image of an object slide. The object then becomes a "ruler" for these lines, as Helmholtz puts it,¹ making them seem straight throughout if the object looked straight to us in that part of them at which it was most distinctly seen.

But all this need of superposition shows how devoid of exact space-import the feelings of movement are *per se*. As we compare the space-value of two retinal tracts by superposing them successively upon the same objective line, so

¹ "We can with a short ruler draw a line as long as we please on a plane surface by first drawing one as long as the ruler permits, and then sliding the ruler somewhat along the drawn line and drawing again, &c. If the ruler is exactly straight we get in this way a straight line. If it is somewhat curved we get a circle. Now, instead of the sliding ruler we use in the field of sight the central spot of distinctest vision impressed with a linear sensation of sight, which at times may be intensified till it becomes an after-image. We follow, in looking, the direction of this line, and in so doing we slide the line along itself and get a prolongation of its length. On a plane surface we can carry on this procedure on any sort of a straight or curved ruler, but in the field of vision there is for each direction and movement of the eye only one sort of line which it is possible for us to slide along in its own direction continually." These are what Helmholtz calls the "circles of direction" of the visual field—lines which he has studied with his usual care. Cp. *Physiol. Optik.* p. 548 ff.

we also have to compare the space-value of objective angles and lines by superposing them on the same retinal tract. Neither procedure would be required if our eye-movements were apprehended immediately as distinct lengths and directions in space. To compare retinal tracts, it would then suffice simply to notice how it feels to move *any* image over them. And two objective lines could be compared as well by moving different retinal tracts along them as by laying them along the same. It would be as easy to compare non-parallel figures as it now is to judge of those which are parallel.¹

6. General Summary.

With this we may end our long and, I fear to many readers, tediously minute survey. The facts of vision form a jungle of intricacy; and those who penetrate deeply into physiological optics will be more struck by our omissions than by our abundance of detail. But for students who may have lost sight of the forest for the trees, I will recapitulate briefly the points of our whole argument from the beginning, and then proceed to a short historical survey, which will set them in relief.

All our sensations are positively and inexplicably extensive wholes.

The sensations contributing to space-perception seem exclusively to be the surface of skin, retina, and joints. 'Muscular' feelings play no appreciable part in our feelings of form, length, direction, &c.

The total bigness of a cutaneous or retinal feeling soon becomes subdivided by discriminative attention.

Movements assist this discrimination by reason of the peculiarly exciting quality of the sensations which stimuli moving over surfaces arouse.

Subdivisions, once discriminated, acquire definite relations of position towards each other within the total space. These 'relations' are themselves feelings of the subdivisions that intervene. When these subdivisions are not the seat of stimuli, the relations are only reproduced in imaginary form.

The various sense-spaces are, in the first instance, incoherent with each other, and, by feeling alone, both they and their subdivisions are often but vaguely comparable in point of bulk and form.

The *education* of our space-perception consists largely of two processes—reducing the various sense-feelings to a com-

¹ Cp. Hering in Hermann's *Handb. der Physiol.* iii. 1, pp. 553-4.

mon measure, and adding them together into the single all-including space of the real world.

Both the measuring and the adding are performed by the aid of *things*.

The imagined aggregate of positions occupied by all the actual or possible, moving or stationary, things which we know, is our notion of 'real' space—a very incomplete and vague notion in most minds.

The measuring of our space-feelings against each other mainly comes about through the successive arousal of different ones by the same *thing*, by our selection of certain ones as feelings of its *real* size and shape, and by the degradation of others to the status of being merely *signs* of these.

For the successive application of the same thing to different space-giving surfaces, motion is indispensable, and hence plays a great part in our space-education, especially in that of the eye. Abstractly considered, the motion of the object over the sensitive surface would educate us quite as well as that of the surface over the object. But the self-mobility of the organ carrying the surface accelerates immensely the result.

In completely educated space-perception, the present sensation is usually just what Helmholtz (*Physiol. Optik*, p. 797) calls it, "a sign, the interpretation of whose meaning is left to the understanding". But the understanding is exclusively reproductive and never productive in the process; and its function is limited to the recall of previous space-sensations with which the present one has been associated and which may be judged more real than it.

Finally, this reproduction may in the case of certain visual forms be as vivid, or almost so, as actual sensation is.

The third dimension forms an original element of all our space-sensations. In the eye it is subdivided by various discriminations. The more distant subdivisions are often shut out altogether, and, in being suppressed, have the effect of diminishing the absolute space-value of the total field of view.¹

7. *Historical.*

Let us now close with a brief historical survey. The first

¹ This shrinkage and expansion of the absolute space-value of the total optical sensation remains to my mind the most obscure part of the whole subject. It is a real optical sensation, seeming introspectively to have nothing to do with locomotor or other suggestions. It is easy to say that "the Intellect produces it," but what does that mean? The investigator who will throw light on this one point will probably clear up other difficulties as well.

achievement of note in the study of space-perception was Berkeley's theory of vision. This undertook to establish two points, first that *distance* was not a visual, but a tactile form of consciousness, suggested by visual signs; secondly, that there is no one quality or "idea" common to the sensations of touch and sight, such that prior to experience one might possibly anticipate from the look of an object anything about its felt size, shape or position, or from the felt touch of it anything about its look.

In other words the primitively chaotic or semi-chaotic condition of our various sense-spaces was established for good by Berkeley; and he bequeathed to psychology the problem of describing the manner in which the deliverances are harmonised so as all to refer to one and the same extended world.

His disciples in Great Britain have solved this problem after Berkeley's own fashion, and to a great extent as we have done ourselves, by the ideas of the various senses suggesting each other in consequence of Association. But, either because they were intoxicated with the principle of association, or because in the number of details they lost their general bearings, they have forgotten, as a rule, to state *under what sensible form the primitive spatial experiences are found*, which later became associated with so many other sensible signs. Heedless of their master Locke's precept, that the mind can frame unto itself no one new simple idea, they seem for the most part to be trying to explain the extensive quality itself, account for it, and evolve it, by the mere association together of feelings which originally possessed it not. They first evaporate the content of extension by making the latter tantamount to mere 'coexistence,' and then explain coexistence as being the same thing as *succession*, provided it be an extremely rapid or a reversible succession. Space-perception thus emerges without being anywhere postulated. The only things postulated are unextended feelings and time. Says Thomas Brown (*Lecture xxiii.*) : "I am inclined to reverse exactly the process commonly supposed; and instead of deriving the measure of time from extension, to derive the knowledge and original measure of extension from time". Brown and both the Mills think that retinal sensations, colours, in their primitive condition, are felt with no extension and that the latter merely becomes inseparably associated with them. John Mill says:—"Whatever may be the retinal impression conveyed by a line which bounds two colours, I see no ground for thinking that by the eye alone we could acquire the conception of what we now

mean when we say that one of the colours is outside [beside] the other.”¹

Whence does the extension come which gets so inseparably associated with these non-extended coloured sensations? From the “sweep and movements” of the eye—from muscular feelings. But, as Prof. Bain says, if movement-feelings give us any property of things, “it would seem to be not space, but time”.² And John Mill says that “the idea of space is, at bottom, one of time”.³ Space then is not to be found in any elementary sensation, but, in Bain’s words, “as a quality, it has no other origin and no other meaning than the association of these different [non-spatial] motor and sensitive effects”.⁴

This phrase is mystical-sounding enough to one who understands association as *producing* nothing, but only as knitting together things already produced in separate ways. The truth is that the English Associationist school, in trying to show how much their principle can accomplish, have altogether overshot the mark and espoused a kind of theory in respect to space-perception which the general tenor of their philosophy should lead them to abhor. Really there are but three possible kinds of theory concerning space. Either (1) there is no spatial *quality* of sensation at all, and space is a mere symbol of succession; or (2) there is a *quality* given immediately in certain particular sensations; or, finally (3), there is a *quality produced* out of the inward resources of the mind, to envelop sensations which, as given originally, are not spatial, but which, on being cast into the spatial form, become united and orderly. This last is the Kantian view. Stumpf admirably designates it as the “psychic stimulus” theory, the crude sensations being considered as goads to the mind to put forth its slumbering power.

Brown, the Mills and Bain, amid these possibilities, seem to have gone astray like lost sheep. With the “mental chemistry” of which the Mills speak—precisely the same thing as the “psychical synthesis” of Wundt, which, as we shall soon see, is a principle expressly intended to do what Association can never perform—they hold the third view, but again in other places imply the first. And, between the impossibility of getting from mere association anything not

¹ *Examination of Hamilton*, 3rd ed., p. 283.

² *Senses and Intellect*, 3rd ed., p. 183.

³ *Exam. of Hamilton*, 3rd ed., p. 283.

⁴ *Senses and Intellect*, p. 372.

contained in the sensations associated and the dislike to allow spontaneous mental productivity, they flounder in a dismal dilemma. Mr. Sully joins them there in a vague and vacillating way. Mr. Spencer of course is bound to pretend to "evolve" all mental qualities out of antecedents different from themselves, so that we need perhaps not wonder at his refusal to accord the spatial quality to any of the several elementary sensations out of which our space perception grows. Thus (*Psychology*, ii., 168, 172, 218) :

"No idea of extension can arise from a *simultaneous excitation*" of a multitude of nerve-terminations like those of the skin or the retina, since this would imply a "knowledge of their relative positions"—that is, "a pre-existent idea of a special extension, which is absurd". "No relation between *successive* states of consciousness gives in itself any idea of extension." "The muscular sensations accompanying motion are quite distinct from the notions of space and time associated with them."

Mr. Spencer none the less inveighs vociferously against the Kantian position that space is produced by the mind's own resources. And yet he nowhere denies space to be a specific affection of consciousness different from time!

Such incoherency is pitiful. The fact is that, at bottom, all these authors are really 'psychical stimulists,' or Kantists. The space they speak of is a super-sensual mental product. This position appears to me thoroughly mythological. But let us see how it is held by those who know more definitely what they mean. Schopenhauer expresses the Kantian view with more vigour and clearness than any one else. He says :—

"A man must be forsaken by all the gods to dream that the world we see outside of us, filling space in its three dimensions, moving down the inexorable stream of time, governed at each step by Causality's invariable law,—but in all this only following rules which we may prescribe for it in advance of all experience,—to dream and say that such a world should stand there outside of us, quite objectively real with no complicity of ours, and thereupon by a subsequent *act*, through the instrumentality of mere sensation, that it should enter our head and reconstruct a duplicate of itself as it was outside. For what a poverty-stricken thing is this mere sensation! Even in the noblest organs of sense it is nothing more than a local and specific feeling, susceptible within its kind of a few variations, but always strictly subjective and containing in itself nothing objective, nothing resembling a perception. For sensation of every sort is and remains a process in the organism itself. As such it is limited to the territory inside the skin and can never, accordingly, *per se* contain anything that lies outside the skin or outside ourselves. . . . Only when the Understanding . . . is roused to activity and brings its sole and only form, the *law of Causality*, into play, only then does the mighty transformation take place which makes out of subjective sensation objective intuition. The Understanding namely grasps by means of its innate, *a priori*, ante-experiential form, the given sensation of the body as an *effect* which as such must necessarily have a

cause. At the same time the Understanding summons to its aid the form of the outer sense which similarly lies already preformed in the intellect (or brain), and which is Space, in order to locate that cause outside of the organism. . . . In this process the Understanding, as I shall soon show, takes note of the most minute peculiarities of the given sensation in order to construct in the outer space a cause which shall completely account for them. This operation of the Understanding is, however, not one that takes place discursively, reflectively, *in abstracto*, by means of words and concepts; but is intuitive and immediate. . . . Thus the Understanding must first create the objective world; never can the latter, already complete *in se*, simply promenade into our heads through the senses and organic apertures. For the senses yield us nothing further than the raw material which must be first elaborated into the objective conception of an orderly physical world-system by means of the aforesaid simple forms of Space, Time and Causality. . . . Let me show the great chasm between sensation and perception by showing how raw the material is out of which the fair structure is upreared. Only two senses serve objective perception: touch and sight. They alone furnish the data on the basis whereof the Understanding, by the process indicated, erects the objective world. . . . These data in themselves are still no perception; that is the Understanding's work. If I press with my hand against the table, the sensation I receive has no analogy with the idea of the firm cohesion of the parts of this mass: only when my Understanding passes from the sensation to its cause, does it create for itself a body with the properties of solidity, impenetrability and hardness. When in the dark I lay my hand on a surface, or grasp a ball of three inches diameter, in either case the same parts of the hand receive the impression: but out of the different contraction of the hand in the two cases my Understanding constructs the form of the body whose contact caused the feeling, and confirms its construction by leading me to move my hand over the body. If one born blind handles a cubical body, the sensations of his hand are quite uniform on all sides and in all directions,—only the corners press upon a smaller part of his skin. In these sensations as such, there is nothing whatever analogous to a cube. But from the felt resistance his Understanding infers immediately and intuitively a cause thereof, which now presents itself as a solid body; and from the movements of exploration which the arms made whilst the feelings of the hands remained constant, he constructs, in the space known to him *a priori*, the body's cubical shape. Did he not bring with him ready-made the idea of a cause and of a space, with the laws thereof, there never could arise, out of those successive feelings in his hand, the image of a cube. If we let a string run through our closed hand, we immediately construct as the cause of the friction and its duration in such an attitude of the hand, a long cylindrical body moving uniformly in one direction. But never out of the pure sensation in the hand could the idea of movement, that is, of change of position in space by means of time, arise: such a content can never lie in sensation, nor come out of it. Our Intellect, antecedently to all experience, must bear in itself the intuitions of Space and Time, and therewithal of the possibility of motion, and no less the idea of Causality, to pass from the empirically given feeling to its cause, and to construct the latter as a so moving body of the designated shape. For how great is the abyss between the mere sensation in the hand and the ideas of causality, materiality, and movement through Space, occurring in Time! The feeling in the hand, even with different contacts and positions, is something far too uniform and poor in content for it to be possible to construct out of it, the idea of Space with its three dimensions, of the action of bodies on each other, with the properties of extension, impenetrability, cohesion, shape, hardness, softness,

rest and motion, in short the foundations of the objective world. This is only possible through Space, Time and Causality . . . being preformed in the Intellect itself . . . from whence it again follows that the perception of the external world is essentially an intellectual process, a work of the Understanding, *to which sensation furnishes merely the occasion*, and the data to be interpreted in each particular case."¹

I call this view mythological, because I am conscious of no such Kantian machine-shop in my mind, and feel no call to disparage the powers of poor sensation in this merciless way. I have no introspective experience of mentally producing or creating space. My space-intuitions occur not in two times but in one. There is not one moment of passive inextensive sensation, succeeded by another of active extensive perception, but the form I see is as immediately felt as the colour which fills it out. That the higher parts of the mind come in, who can deny? They aggregate and summate, they equate and measure, they reproduce and abstract. They inweave the space-sensations with intellectual relations; but *these* relations are the same when they obtain between the elements of the space-system, as when they obtain between any of the other elements of which the world is made.

The essence of the Kantian contention is that there are not *spaces*, but *Space*—one infinite continuous *Unit*—and that our knowledge of *this* cannot be a piecemeal sensational affair, produced by summation and abstraction. To which the obvious reply is that, if any known thing bears on its front the *appearance* of piecemeal construction and abstraction, it is this very notion of the infinite unitary space of the world. It is a *notion*, if ever there was one; and no intuition. Most of us apprehend it in the barest symbolic abridgment: and if perchance we ever do try to make it more adequate, we just add one image of sensible extension to another until we are tired. Most of us are obliged to turn round and drop the thought of the space in front of us when we think of that behind. And the space represented as near to us seems more minutely subdivisible than that we think of as lying far away.

The other prominent German writers on space are also ‘psychical stimulists’. Herbart, whose influence has been widest, says “the resting eye sees no space,”² and ascribes visual extension to the influence of movements combining with the non-spatial retinal feelings so as to form gradated series of the latter. A given sensation of such a series

¹ *Vierfache Wurzel des Satzes vom zureichenden Grunde*, pp. 52-7.

² *Psychol. als Wissenschaft*, § 111.

reproduces the idea of its associates in regular order, and its idea is similarly reproduced by any one of them with the order reversed. Out of the fusion of these two contrasted reproductions comes the form of space¹—Heaven knows how.

The obvious objection is that mere serial order is a *genus*, and space-order a very peculiar species of that *genus*; and that, if the terms of reversible series became by that fact coexistent terms in space, the musical scale, the degrees of warmth and cold, and all other ideally graded series ought to appear to us in the shape of extended corporeal aggregates,—which they notoriously do not, though we may of course *symbolise* their order by a spatial scheme. W. Volkmann, the Herbartian, takes the bull here by the horns, and says the musical scale is spatially extended, though he admits that its space does not belong to the real world.² I am unacquainted with any other Herbartian so bold.

To Lotze we owe the much-used term ‘Local-sign’. He insisted that space could not emigrate directly into the mind from without, but must be *reconstructed* by the soul; and he seemed to think that the first reconstructions of it by the soul must be super-sensual. But why may not sensations themselves be the soul’s *original* spatial reconstructive acts, upon which, of course, other acts of further reconstruction may ensue?

Wundt has all his life devoted himself to the elaboration of a space-theory, of which the neatest and most final expression is to be found in his *Logik* (i. 457-60). He says:—

“In the eye, space-perception has certain constant peculiarities which prove that no single optical sensation by itself possesses the extensive form, but that everywhere in our perception of space heterogeneous feelings combine. If we simply suppose that luminous sensations *per se* feel extensive, our supposition is shattered by that influence of movement in vision, which is so clearly to be traced in many normal errors in the measurement of the field of view. If we assume on the other hand that the movements and their feelings are alone possessed of the extensive quality, we make an unjustified hypothesis, for the phenomena compel us, it is true, to accord an influence to movement, but give us no right to call the retinal sensations indifferent, for there are no visual ideas without retinal sensations. If then we wish rigorously to express the given facts, we can ascribe a spatial constitution only to *combinations* of retinal sensations with those of movement.”

Thus Wundt, dividing theories into “nativistic” and “genetic,” calls his own a genetic theory. To distinguish it

¹ *Psychol. als Wissenschaft*, § 113.

² *Lehrbuch d. Psychol.*, 2te Auflage, Bd. ii. p. 66. Volkmann’s 5th Chapter contains a really precious collection of historical notices concerning space-perception-theories.

from other theories of the same class, he names it a "theory of complex local signs".

"It supposes two systems of local signs, whose relations—taking the eye as an example—we may think as . . . the measuring of the manifold local sign-system of the retina by the simple local sign-system of the movements. In its psychological nature this is a process of associative synthesis: it consists in the fusion of both groups of sensations into a product, whose elementary components are no longer separable from each other in idea. In melting wholly away into the product which they create they become consciously undistinguishable, and the mind apprehends only their resultant, the intuition of space. Thus there obtains a certain analogy between this psychic synthesis and that chemical synthesis which out of simple bodies generates a compound that appears to our immediate perception as a homogeneous whole with new properties."

Now let no modest reader think that if this sounds obscure to him it is because he does not know the full context; and that if a wise professor like Wundt can talk so fluently and plausibly about "combination" and "psychic synthesis," it must surely be because those words convey a so much greater fulness of positive meaning to the scholarly than to the unlearned mind. Really it is quite the reverse; *all* the virtue of the phrase lies in its mere sound and skin. Learning does but make one the more sensible of its inward unintelligibility. Wundt's "theory" is the flimsiest thing in the world. It starts by an untrue assumption, and then corrects it by an unmeaning phrase. Retinal sensations *are* spatial; and were they not, no amount of "synthesis" with equally spaceless motor-sensations could intelligibly make them so. Wundt's theory is, in short, but an avowal of impotence, and an appeal to the inscrutable powers of the soul.¹ It confesses that we cannot analyse the constitution or give the genesis of the spatial quality in consciousness. But at the same time it says the *antecedents* thereof are psychical and not cerebral facts. In calling the quality in question a *sensational* quality, our own account equally disclaimed ability to analyse it, but said its antecedents were cerebral, not psychical—in other words, that it was a *first* psychical thing. This is merely a question of probable fact, which the reader may decide.

And now what shall be said of Helmholtz? Can I find fault with a book which, on the whole, I imagine to be one of

¹ Why talk of 'genetic theories'? when we have in the next breath to write as Wundt does: "If then we must regard the intuition of space as a product that simply emerges from the conditions of our mental and physical organisation, nothing need stand in the way of our designating it as one of the *a priori* functions with which consciousness is endowed." *Logik*, ii. 460.

the four or five greatest monuments of human genius in the scientific line? If truth impels I must fain try, and take the risks. It seems to me that Helmholtz's genius moves most securely when it keeps close to particular facts. At any rate it shows least strong in purely speculative passages, which in the *Optics*, in spite of many beauties, seem to me fundamentally vacillating and obscure. The "empiristic" view which Helmholtz defends is, that the space-determinations we perceive are in every case products of a process of unconscious inference.¹ The inference is similar to one from induction or analogy.² We always see that form before us which *habitually* would have caused the sensation we now have.³ But the latter sensation can never be intrinsically spatial, or its intrinsic space-determinations would never be overcome as they are so often by the "illusory" space-determinations it so often suggests.⁴ Since the illusory determination can be traced to a suggestion of Experience, the "real" one must also be such a suggestion: so that *all* space intuitions are due solely to Experience.⁵ The only psychic activity required for this is the association of ideas.⁶

But how, it may be asked, can association produce a space-quality not in the things associated? How can we by induction or analogy infer what we do not already generically know? Can "suggestions of experience" reproduce elements which no particular experience originally contained? This is the point by which Helmholtz's "empiristic" theory, as a *theory*, must be judged. No theory is worthy of the name which leaves such a point obscure.

Well, Helmholtz does so leave it. At one time he seems to fall back on inscrutable powers of the soul, and to range himself with the 'psychical stimulists'. He speaks of Kant as having made the essential step in the matter in distinguishing the content of experience from that form—space, of course—which is given it by the peculiar faculties of the mind.⁷ But elsewhere again,⁸ speaking of sensationalistic theories which would connect spatially determinate feelings directly with certain neural events, he says it is better to assume only such simple psychic activities as we *know* to exist, and gives the association of ideas as an instance of what he means. Later,⁹ he reinforces this remark by confessing that he does not see how any neural process *can* give rise without antecedent experience to a ready-made (*fertige*) perception of space. And, finally, in a single

¹ P. 430.

² Pp. 430, 449.

³ P. 428.

⁴ P. 442.

⁵ Pp. 442, 818.

⁶ P. 798.

⁷ P. 456; see also 428, 441.

⁸ P. 797.

⁹ P. 812.

momentous sentence, he speaks of sensations of *touch* as if they might be the original material of our space-percepts—which thus, from the optical point of view “may be assumed as *given*.¹

Of course the eye-man has a right to fall back on the skin-man to help him at a pinch. But this means that he is a mere eye-man and not a complete psychologist. In other words, Helmholtz’s *Optics* and the “empiristic theory” there professed are not to be understood as attempts at answering the *general* question of how space-consciousness enters the mind. They simply deny that it enters with the first optical sensations.² Our own account has affirmed stoutly that it enters *then*; but no more than Helmholtz have we pretended to show *why*. Who calls a thing a first sensation admits he has no theory of its production. Helmholtz, though all the while without an articulate theory, makes the world think he has one. He beautifully traces the immense part which reproductive processes play in our vision of space, and never—except in that one pitiful little sentence about touch—does he tell us just what it is they reproduce. He limits himself to denying that they reproduce originals of a visual sort. And, so difficult is the subject, and so magically do catch-words work on the popular-scientist ear, that most likely, had he written ‘sensationalistic’ instead of ‘nativistic,’ and ‘spiritualistic’ instead of ‘empiristic’ (which synonyms Hering suggests), numbers of his present empirical evolutionary followers would fail to find in his teaching anything worthy of praise. But since he wrote otherwise, they hurrah for him as a sort of second Locke, dealing another deathblow at the old bugaboo of ‘innate ideas’. His ‘nativistic’ adversary Hering, they probably imagine—Heaven save the mark!—to be a scholastic in modern disguise.

After Wundt and Helmholtz, the most important anti-sensationalist space-philosopher in Germany is Prof. Lipps, whose deduction of space from an order of non-spatial differences, continuous yet separate, is a wonderful piece of subtlety and logic. And yet he has to confess that continuous differences form in the first instance only a logical series, which *need not* appear spatial, and that wherever it does so

¹ Bottom of page 797.

² In fact, to borrow a simile from Prof. G. S. Müller (*Theorie der sinnl. Aufmerksamkeit*, p. 38), the various senses bear in the Helmholtzian philosophy of perception the same relation to the ‘object’ perceived by their means, that a troop of jolly drinkers bear to the landlord’s bill, when no one has any money, but each hopes that one of the rest will pay.

appear, this must be accounted a "fact," due merely "to the nature of the soul".¹

Lipps, and almost all the anti-sensationalist theorists except Helmholtz, seem guilty of that confusion which Mr. Shadworth Hodgson has done so much to clear away, *viz.*, the confounding the analysis of an idea with the means of its production. Lipps, for example, finds that every space we think of can be broken up into positions, and concludes that in some undefined way the several positions must have pre-existed in thought before the aggregate space could have appeared to perception. Similarly Mr. Spencer, defining extension as an "aggregate of relations of coexistent position," says "every cognition of magnitude is a cognition of relations of position,"² and "no idea of extension can arise from the simultaneous excitation" of many nerves "unless there is a knowledge of their relative positions".³ Just so Prof. Bain insists that the very meaning of space is scope for movement,⁴ and that therefore distance and magnitude can be no original attributes of the eye's sensibility. Similarly because movement is analysable into positions occupied at successive moments by the mover, philosophers (*e.g.*, Schopenhauer, as quoted above) have repeatedly denied the possibility of *its* being an immediate sensation. We have however seen that it is the most immediate of all our space-sensations. Because it can only occur in a definite direction the impossibility of perceiving it without perceiving its direction has been decreed—a decree which the simplest experiment overthrows.⁵ It is a case of what I have elsewhere (MIND ix. 20) called the 'psychologist's fallacy': mere acquaintance with space is treated as tantamount to every sort of knowledge about it, the conditions of the latter are demanded of the former state of mind, and all sorts of mythological processes are brought in to help.⁶ As well might one say that because the world consists of all its parts, therefore we can

¹ *Grundtatsachen des Seelenlebens*, 1883, pp. 480, 591-2.

² *Psychology*, ii., p. 174.

³ *Ibid.*, p. 168.

⁴ *Senses and Intellect*, 3rd edition, pp. 366-75.

⁵ Cf. Hall and Donaldson in MIND x. 559.

⁶ As other examples of the confusion, take Mr. Sully: "The *fallacious assumption* that there can be an idea of distance in general, apart from particular distances" (MIND iii., p. 177); and Wundt: "An indefinite localisation, which waits for experience to give it its reference to real space, stands in contradiction with the very idea of localisation, which means the reference to a determinate point of space" (*Physiol. Psych.*, 1te Aufl., p. 480).

only apprehend it at all by having unconsciously summed these up in our head. It is the old idea of our actual knowledge being drawn-out from a pre-existent potentiality, an idea which, whatever worth it may metaphysically possess, does no good in psychology.

My own sensationalistic account has derived most aid and comfort from the writings of Hering, A. W. Volkmann, Stumpf, Leconte, and Schön. All these authors allow ample scope to that Experience which Berkeley's genius saw to be a present factor in all our visual acts. But they give Experience some grist to grind, which the *soi-disant* 'empiristic' school forgets to do. Stumpf seems to me the most philosophical and profound of all these writers. That Hering should have occasionally been fanciful in his assumptions concerning sensations of the third dimension, does not seem to me fatal to the supposition that we have such sensations. In English there is a certain amount of good anti-associationist criticism. The ablest special works are those of Bailey and of Abbott. To the latter author belongs the honour of first in England discussing the question on the basis of the *facts* of vision, of which, having been mainly discovered in Germany, the English associationist authorities were almost uninformed. Dr. E. Montgomery's papers in Vol. x. of MIND contain many valuable introspective remarks and critical observations ; but with his notion of an unitary objective space known by the specific energy of a specific central organ, and at definite positions within which we locate each particular sensation, I cannot agree.

III.—THE PLACE OF HYPOTHESIS IN EXPERIMENTAL SCIENCE.¹

By J. M. RIGG.

THE following pages are intended to establish (1) that hypothesis is the principal organon of discovery in experimental science ; (2) that hypothesis is based on analogy ; (3) that scientific hypotheses are not empirically verifiable. I shall then proceed to enunciate what I conceive to be the postulates of experimental science and the *rationale* of verification, and indicate briefly a view of the relation between physics and metaphysics.

That hypothesis is the principal organon of discovery in experimental science will doubtless seem a hard saying to not a few. The celebrated “*Hypotheses non fingo*” of Newton seems to act upon many thinkers like a charm ; they do not see that the emphasis is to be laid upon the *fingo*. They regard hypothesis as at best but a doubtful auxiliary to observation and experiment, and conceive that the main occupation of experimental science consists in establishing, by what are known as the experimental methods, the existence of invariable relations of coexistence, antecedence and sequence between phenomena. It is not necessary for me to dispute the possibility of establishing by observation and experiment the existence of relations which in a certain sense are invariable. This at present I am concerned neither to affirm nor to deny. I contend, however, that when established such relations do not amount to laws of nature.

In the first place it must be remarked that an uniformity of coexistence or of antecedence and sequence may mean either (1) an observed uniformity or (2) an hypothetical uniformity. So far, however, as laws of nature may consist of hypothetical uniformities, it is clear that the experimental methods alone are powerless to discover them. On the other hand, it can, I think, be demonstrated that no relations of coexistence, antecedence and sequence that are not hypothetical are in the strict sense laws of nature.

If by uniformities of relation we are to understand merely

¹ The substance of this paper was read before the Philosophical Society on 30th November, 1886.

observed uniformities, the impotence of the experimental methods to establish laws of nature becomes patent. Observation, eked out by memory and experiment, may establish an uniformity, but such uniformity only furnishes science with a *datum* on which to found an hypothesis. The experimental methods so elaborately analysed by Mill and Lotze are essentially methods of elimination. The same phenomenon is observed to be sequent, now upon one, now upon another, combination of antecedent phenomena. If then the several sets of antecedent phenomena have a common and only one common element, it is presumable that in the absence of the common element the sequent phenomenon would not occur; and if by observation or experiment we obtain a case in which, no new element being present in the antecedent, the common element is wanting and the sequent phenomenon no longer occurs, we infer—what? Simply that as often as the case is repeated without change in the conditions, the result will be the same. Into the question of the warrant for this inference I do not here enter. The reader is entitled to assume that the warrant is the uniformity of nature, or the principle of identity, or any other principle that he may prefer. All that I am concerned to maintain is that the relation thus established does not amount to a law of causation, even if causation be no more than unconditional invariability of antecedence and sequence¹ between phenomena. The experimental methods cannot establish the existence of any unconditional relations between phenomena. All that they can establish is the existence of relations, the invariability of which is contingent upon the conditions remaining constant. They establish, in fact, conditional invariabilities of relation. Nay more: science distinctly negatives the existence of unconditionally invariable relations between phenomena.

Geology has unrolled the records of past ages during which the forces of nature, though identical in kind with those now operating on the earth, were nevertheless so differently compounded as to produce widely different effects. Most of the sequences of events which were then observable on the planet must have been in striking contrast to any that are now observable; and whether we accept the nebular hypothesis or no, it is clear that the sequences of events now observable in the solar and sidereal systems are far from similar to those which might once have been observed, and

¹ I say sequence because I hold that consequence is more than the empirical theory of causation is entitled to.

that the existing distribution of matter and motion is undergoing a gradual transformation which, when complete, will present to future observers a set of relations of coexistence, antecedence and sequence totally different from any which we observe to-day. If causation were really unconditionally invariable antecedence and sequence between phenomena, none but periodical events could with any plausibility be said to be subject to causation, and of them only such as could be proved to be not subject to modification by counteracting causes ; nor even so would any date be assignable when *post hoc* might ripen into *propter hoc*. In fact, however, it cannot be maintained that any observable events there are of which the recurrence is unconditionally invariable. The 'composition' of causes stands in the way.

It is indeed impossible, consistently with the empirical theory of causation, to give a meaning to this expression 'composition of causes'. Two causes may neutralise one another, or be so compounded as to produce a different result from that which either of them operating singly would have produced. Were causation unconditional invariability of antecedence and sequence, this would be impossible. If unconditional invariability has any meaning, an unconditionally invariable relation of antecedence and sequence is one which is in no way modifiable. The composition of two unconditionally invariable events is a contradiction in terms. Nay, in strictness of speech, events are not capable of composition at all ; they can only be related in the way either of coexistence, or of antecedence and sequence. It may perhaps be said that the empirical theory of the composition of causes merely means that the simultaneous occurrence of several events is invariably followed by an event different from that which would have invariably supervened upon any one of them occurring singly. This, however, is to abandon the idea of unconditionality. An event which is only followed by another event provided some other event also occurs, is not an unconditionally invariable antecedent, and therefore, on the empirical theory of causation, no cause.

In short, if we define causation as unconditional invariability of antecedence and sequence between phenomena, we have no choice but to hold that only those antecedents upon which the same event always ensues and will ensue "so long as the present constitution of things endures," no matter what other antecedents are combined with them and "under all changes of circumstances," are causes ; but, as we do not know that any such antecedents there are, the consistency of

the theory would thus be saved at the expense of its significance.¹

If, however, the idea of unconditionality be abandoned and causation be defined as conditionally invariable antecedence and sequence between phenomena, then the difficulty presented by the so-called 'plurality of causes' has to be met. If an event may supervene upon any one of several independent antecedents, in what sense can any one of such antecedents be said to be the invariable antecedent of that effect? In the sense, it may perhaps be urged, that, given any one of them, the effect invariably follows. This, however, is to abandon uniformity of antecedence, reducing causation to mere uniformity of sequence; it is necessary to constitute even a conditionally invariable antecedent, not merely that the sequent should invariably follow upon it, but that in default of the antecedent happening the sequent should not happen. If there are several possible antecedents of a given event, no one of them can answer the description of even a conditionally invariable antecedent. Heat, *e.g.*, may be generated in a variety of ways. The Method of agreement enables us to say that, given one or other of certain antecedents, heat will always, in the absence of counteracting causes, be generated. The method of difference establishes that, in the absence of one or other of the said antecedents, heat will not be generated; but it does not entitle us to say that any one of these antecedents is even the conditionally invariable antecedent of the generation of heat; for, though the conditions remain otherwise strictly identical, heat may be generated either by friction, or percussion, or electricity. The method of difference is powerless to eliminate the plurality of causes; that can only be done by hypothesis—by assuming, *e.g.*, in the instance of heat, that at bottom the various modes in which it is generated are identical as being all modes of motion.

Moreover, even in cases into which the plurality of causes does not enter, it cannot without absurdity be maintained that causation is mere conditional invariability of antecedence and sequence. On such a theory high tide would have to be reckoned the cause of low tide, and *vice versa*. If then, discarding the idea that either unconditionality or antecedence

¹ "That which will be followed by a given consequent, when and only when some third circumstance also exists, is not the cause, even though no case should ever have occurred in which the phenomenon took place without it" (Mill's *Logic*, 8th ed., bk. iii., c. 5, § 6). It is safe to say that no observable event is ever followed by another except conditionally upon some third circumstance being given.

are necessary elements in causation, we define cause as the totality of the conditions which given a phenomenon invariably occurs, which not given it as invariably does not occur, we have to ask what we mean by 'totality of conditions'.

The phrase may mean either the totality of the phenomenal or sensible conditions of a phenomenon, or the totality of its conditions, insensible as well as sensible. Only in the former sense can the totality of the conditions of a phenomenon be ascertained by observation and experiment; but in this limited sense the conditions of a phenomenon are merely so many particular facts, and the fullest account which could be given of them would amount to no more than a description of the phenomenon, its concomitants and antecedents. On the other hand, the causes with which science is concerned are, as I shall show in the sequel, always insensible, the laws which it formulates always hypothetical. If, however, the expression 'totality of conditions' is to include the insensible as well as the sensible conditions of phenomena, it is too wide for practical utility, since the absolute totality of the conditions which determine a phenomenon is only knowable by omniscience. Whatever scientific men mean by cause, they mean neither the empirically uniform antecedents and concomitants of a phenomenon nor the totality of its conditions: they mean more than the one and less than the other.

What then, the reader may ask with some impatience, do you say that they mean? I answer: the distinction between cause and effect is simply one mode of the distinction between the real and the apparent. Physics starts with the postulate that the observed order is not the real order. It regards sensible appearances and their empirically uniform interconnexions as merely indices of a real order, which can only be apprehended by means of the exercise of a faculty which may with indifference be called reason or scientific imagination. Such a conception is implied in the mere use of the terms object and objective, and, as object and subject are correlative, is based upon the rock of self-consciousness. What the object or substance is to a group of sensible perceptions, that the cause is to an event or sequence of events. Physical science is an attempt to give precision to that conception of the world, as other than that which it appears, which is implicit in ordinary experience, and for this purpose its chief instrument is hypothesis. Observation and experiment are indeed indispensable, but only for the purpose of furnishing hypothesis with correct data and testing the adequacy, or, as Lewes well said, the "effectiveness," of a

given hypothesis. Physics assumes what empirical philosophy, if it does not deny, at least will not assert, *viz.*, the existence of a world of noumenal causes and "real essences"; and it is with the attempt to define the nature of these noumenal causes and real essences that induction in the strict sense begins. It is probably because they come to the subject with minds clouded by sensational metaphysics that logicians of the empirical school have overlooked this fact. They have described rather the method of their own philosophy than that of physical science, which is not so much empirical as theoretic.

Had the aim of the early physicists been merely to observe and tabulate uniformities of relation, it is not too much to say that neither astronomy nor physics would have come into being. By the method of observing and registering relations of coexistence, antecedence and sequence alone, we could never have come by the knowledge even of the sun, moon and stars. Had causation meant for the early thinkers invariability of antecedence and sequence (and how could they have distinguished between conditional and unconditional invariability?), they would have noted the fact that the emergence of a luminous disc from below the horizon was the uniform antecedent of day and its disappearance the uniform antecedent of night, and there the matter must have ended. The hypothesis that both phenomena were occasioned by the motion of a vast body so distant from the earth as to present to them the appearance of a mere disc of light could only have been framed by men who believed in a world transcending experience and sought to define it. Pythagoras in substituting the idea of the sun as the centre of the planetary system for that of the earth, the Alexandrian astronomers in reconciling the apparent motions of the sun and planets with the immobility of the earth by their elaborate theory of epicycles and eccentricities, Copernicus in showing that the Pythagorean theory, while simpler than the Ptolemaic, explained at once the apparent motions of the sun and planets and the apparent immobility of the earth,—all employed a method which was certainly inductive, but at the same time boldly set at nought the testimony of the senses and transcended experience. The motions of the planets are no more phenomena than are the ultimate atoms of which their substance is supposed to be constituted; they are not empirically verifiable, but we know that if they take place they must present to us the appearances which we see, and we assume their existence because we are unable to deduce the phenomena from any

hypothesis which introduces a larger measure of unity into our conception of the objective conditions of the said phenomena. Similarly, physics originated in the attempt to define the essential nature of material substance. Thales saw all things in water, Anaximenes in air, Heraclitus in fire, Anaxagoras supposed matter to be constituted of minute invisible particles, but apparently failed to conceive of these particles as essentially homogeneous. An immense stride was taken in this direction when Democritus attempted to explain the secondary qualities of matter as resulting from differences in the arrangement of the ultimate particles. In modern times all the secondary qualities except flavour and odour have been resolved into modes of molecular motion. Had not the thinkers to whom we owe the molecular theory believed in a "real essence" underlying material phenomena, and in the possibility of defining that "real essence"—had they been, in a word, imbued with the principles of modern empirical philosophy, and content to abide in the outward shows of things, noting and registering such relations as were uniform—physics had never been.

The causes of events in the sense explained may or may not be conceived as events or sequences of events, but the relation between cause and effect is always one of coexistence; nor does science rest content with a cause which is merely an event or a sequence of events.

The first hypothesis concerning the cause of an event usually consists in treating it as the index of some other but insensible event suggested by analogy. Logicians of the empirical school regard analogy as distinct from induction, and treat it with scant respect; but, as Lotze has pointed out (*Logic*, § 274), hypothesis ought to rest upon analogy.

Young is said by a flash of genius to have seen, in the darkness which resulted from the fusion of two beams of light in Grimaldi's experiment, the analogue of the stillness produced by the neutralisation of one wave by another. This was the germ of the undulatory theory of light. In the case of the molecular theory of sound the analogy was more obvious. There the *experimentum crucis* was the ringing of a bell in a receiver nearly empty of air, the sound being scarcely audible. It was then clear that in so far as the vibrations of the resonant surface failed of affecting the ear, it was for want of propagation by the air, and the analogy of the ripple propagated in a gradually widening circle round an object dropped into water came to hand at once. If the latter was explicable as an agitation of particles, each of which after communicating its motion to its neighbour re-

turned to rest, so also might conceivably the propagation of sound be explained. It also lay on the surface that pitch might vary as the velocity of the undulations ; and, the fact (proved by Newton) that the rate of propagation is constant for all degrees of loudness according with the fact that the rate of propagation of visible waves is constant for all degrees of amplitude or range of swing, it was inferred that loudness varies with the amplitude of the sound-wave. These essential points settled, it only remained to adapt the theory to the exigencies of special cases. Even Helmholtz's analysis of the composition of musical notes is of this kind. From the familiar fact that harmony is pleasant he inferred that a musical note was probably itself a harmony, and the results obtained by magnifying sound by mechanical appliances accorded with his hypothesis.

In like manner the theory that the celestial luminaries are solid bodies similar to the earth can only have been reached by a process of analogical reasoning. Anaxagoras, e.g., was clearly reasoning by analogy when he broached the theory that the sun and stars were masses of stone ignited by the force of rotation. Again, the molecular theory involves the hypothetical endowment of that which to sense is perfectly simple with a complex structure analogous to that with which we are familiar in composite bodies. It also is a mere analogy, unverifiable empirically but accepted because it enables us to assimilate the infra-sensible to the sensible world.

Nay, the very conception of an object is an analogical transference of the unity and identity which we know as self to that which in itself is a mere cluster of perceptions, and the idea of force, as Mr. Spencer is fond of telling us, is derived by analogy from the experience of volition.

Now if hypothesis is, as I hold, the most important part of the inductive process, it follows that the principle of induction is aptly expressed in the much-criticised Newtonian canon : "Effectuum naturalium ejusdem generis eadem sunt causæ".¹ On the strength of a similarity in the phenomena, which may be obvious or may be recondite, a similarity in the causes which determine them is inferred, and an attempt is then made to deduce the phenomenon from the hypothesis, which is accepted or rejected according as it does or does not admit of such deduction. Hence a subtle power of detecting recondite resemblances, boldness in assuming essential identity of conditions on the strength thereof, and

¹ Cp. Lotze's *Logic*, p. 317.

patience in making the observations and ingenuity in contriving the experiments necessary to test the theory, are alike indispensable to scientific progress. I have said that science does not rest content with explaining phenomena in terms of events. This is especially true of modern science, which is chiefly distinguished from ancient science by the prominence given to the idea of force.

Phenomena having been explained in terms of insensible motion, molar and molecular, these latter are in their turn explained in terms of force. Dynamism would be more appropriate than Materialism as a designation of the modern scientific movement, the idea of inertia having given place to that of an equilibrium of forces.

Of force the empirical logic knows not what to make : it is difficult to extract from its exponents any consistent doctrine on the subject. As, however, Mill illustrates his chapter on the composition of causes by examples of the composition of forces, it is safe to assume that he at least regarded force as synonymous with cause, and therefore reducible to uniformity of antecedence. This view, however, is radically unscientific. Science does not regard force as anteceding its results at all : it regards them as strictly synchronous. Gravitation, cohesion, chemical affinity, do not antecede the various phenomena which they condition, but are exhibited in them. The force of which Mr. Spencer writes with such impressiveness is neither an event nor any number of events, but the condition of all events happening. The conception is indispensable to science, which, as I have said, cannot rest in mere events ; but it is not empirically verifiable. Even if we take the step which Mr. Spencer declines to take, and identify physical forces with that force which we know immediately as exerted by ourselves in volition, still the projection of such force into the universe at large remains a mere analogy wholly "unsusceptible of being ultimately brought to the test of actual induction".

If the foregoing account of causation and scientific method is true, a law of causation will be definable as an hypothesis by which several events or sequences of events are deduced from one and the same cause or combination of causes. As such it will be a relation not of sequence, but of coexistence and community. There will thus be no radical distinction between cause and law ; rather every cause so soon as defined will be itself a law, provided only the phenomena are deducible from it. A law, in fact, is simply the definition of a given cause. This point is so clear that illustration

may seem superfluous. I need therefore only remind the reader that the essence of the law of gravitation consists in its connecting facts so disparate as the fall of a stone and the persistence of the planets in their orbits as effects of one and the same cause ; that the molecular theory of heat identifies the cause of the sensation, no matter what the sensible antecedent may have been, with an agitation of the insensible particles of matter ; that Lavoisier's theory of combustion traces processes so apparently diverse as calcination, combustion and acidification to the operation of the same force, *viz.*, oxygen.

To sum up the matter : physical science presupposes the determination of phenomena by objective conditions or causes ; observation establishes empirical rules to the effect that certain phenomena have hitherto, so far as experience has extended, coexisted with or ensued upon certain other phenomena ; experiment purifies these rules from all unessential elements by the process of elimination analysed by Mill ; the result is the formulation of conditional uniformities of coexistence, antecedence and sequence ; then begins the process of induction in the strict sense, which consists in framing an hypothesis based on analogy concerning the nature of the causes which determine the uniformity in question ; the hypothesis, when framed, is tested by attempting to deduce the phenomena from it with the help, if necessary, of experiments to test the adaptability of the theory to special cases. This last process is sometimes called verification, and no doubt in a certain relative sense it is so. Verification, in the sense of strict proof, it certainly is not, since even if the hypothesis stands the test its absolute truth is not thereby established.

The principal use of the process commonly known as verification is not to verify, but to disprove. It is a criterion rather of error than of truth. If we were to adopt the view that mere deduction of the phenomena from the hypothesis, together with the fact that the theory has been so articulated as to meet all special cases as yet given by nature or invented by experiment and to serve as an instrument of prediction, amounted to absolute proof, we should land ourselves in the absurd position that what is proved to-day may be disproved to-morrow, since hypotheses which explain certain facts perfectly well are sometimes superseded by others which explain them not a whit better, but happen to have a wider range of applicability ; it is very difficult, in any given instance, to say that the resources of analogy have been exhausted. That some limit to the powers of the human

mind in explaining phenomena there must be, is clear ; the difficulty is in proving that it has been reached. Nor, if we suppose that in certain fields it has been reached, does that fact warrant us in assuming the absolute truth of the hypothesis in question. It may not be possible for us to attain absolute truth by means of hypotheses.

Mill distinguished between hypotheses which rest on mere analogy and such as are capable of " being ultimately brought to the test of actual induction," claiming for the latter a verifiability which he denied to the former (*Logic*, 8th ed., vol. ii., pp. 15, 94). And on this ground he refused the title of " positive truths " to both the emission and the undulatory theory of light. In fact, however, neither of these theories stands in a worse position than the commonplace hypothesis of an atmosphere. The atmosphere is just as little capable of being brought to the test of actual induction as is the luminiferous ether. Its existence is assumed upon the analogy of watery fluid for the purpose of accounting for certain phenomena, just as is the existence of the ether. We are so familiar with the hypotheses of an atmospheric medium that we have ceased to regard it as an hypothesis, and it requires a certain effort of thought to realise that it is so ; yet nothing can be more certain than that if we had no experience of visible fluid, however we might explain the motions of the clouds and the pressure of the air upon us, it could not be by means of an atmosphere. We should have no experience capable of yielding the notion. It is clear therefore that the atmosphere, as distinct from the perceptions for which it accounts, is not, strictly speaking, a " real phenomenon " ; is not, in fact, a sensible, but a mere hypothesis. It is possible that at some future time the idea of a luminiferous ether may be so familiar that its hypothetical character may be forgotten. In any case it is impossible to draw any valid distinction between the two hypotheses, except so far as the hypothesis of an ethereal medium may not have been so thoroughly tested as the hypothesis of an atmospheric medium has been. The latter hypothesis is, however, accepted for no other reason than that it explains certain facts, and enables us to interpret them as the result of undulations of the said medium ; and until men shall have acquired the porcine faculty of seeing the wind it will remain entirely " unsusceptible of being brought to the test of actual induction ".

It follows that the theory of sound, which is based upon the hypothesis of an aerial medium, is not empirically verifiable. Nay the entire molecular theory is incapable of em-

pirical verification, and so is the Copernican theory : they explain phenomena, but not by means of causes which are themselves phenomena.

If then, it will be asked, laws of causation are hypotheses, and as such liable to supersession, what becomes of the immutability which is commonly supposed to be essential to a law of nature? The answer seems to be that the idea which underlies our ascription of immutability to laws of nature does not stand or fall with the truth or otherwise of laws of causation, but is really identical with the uniformity of nature. The uniformity of nature involves five principles, which are : (1) that every event is the index of a cause or combination of causes ; (2) that no event is the index of more than one cause or combination of causes ; (3) that, given the proper cause or combination of causes, in the absence of counteracting causes, the effect always occurs ; (4) that the sum total of ultimate causes is a fixed quantity ; (5) that the causes existing in the universe are so related, *inter se*, that in virtue of their mutual modification change, though incessant, is on the whole gradual.

The first of these principles we have already discussed at length ; the second is clearly required by the uniformity of nature. If the same effect might indicate any one of several alternative causes, there would manifestly be a breach of uniformity. In the case *e.g.*, of heat, where if anywhere there might seem to be a plurality of causes (as friction, percussion, electrical and chemical action), the uniformity of nature requires and science has established that there is but one cause, *viz.*, molecular motion.¹

The third principle, *viz.*, that, given the cause and no counteracting causes, the effect always happens, is equally necessary to the uniformity of nature. If it were not true physics would be impossible. The fourth principle, that the

¹ The application of the molecular theory to heat is one of the most interesting examples of the true inductive method. By the liquefaction of two pieces of ice by mutual friction Davy proved that the accepted theory, which identified the objective correlative of the sensation with a subtle fluid (caloric), permeating bodies and forced out of them by friction, could not possibly be true, since a body which had parted with a certain quantity of caloric by friction, as according to the theory the melted ice had done, must require the application of more caloric to raise it to a certain degree of temperature than it required before, and this was not true of the water into which the ice had been converted by the friction, its temperature being higher than that of the ice. And as the effect of friction was already conceived to be an agitation of the molecules constituting the rubbed body, Davy inferred that such an agitation was the objective correlative of the sensation of heat.

sum total of ultimate causes is a fixed quantity, follows from the first; for the coming into being of a new ultimate cause, or the passing out of existence of an old one, would be an uncaused event. The fifth principle, that of the reciprocal action of causes, is essential to the idea of an universe. If any cause or set of causes was unrelated to the rest, there would be, strictly speaking, no universe. If, e.g., the forces which make for rest and those which make for motion were unrelated, there would be two worlds but no universe—a world in which everything was at rest and a world in which change was perpetual and universal, but no transition from motion to rest and rest to motion. There would thus be no universe, no organic unity of things. It is clear therefore that the existence of the universe implies that the statical and dynamical forces do interact. It is further implied that such forces are equal in amount. If, e.g., there were a preponderance of the statical over the dynamical forces, the universe must eventually pass into a state of complete quiescence. This would, however, involve the impossible supposition of a last event. It follows that the statical and dynamical forces must be regarded as equivalent. If, however, they were also equally distributed, it is plain that no change could ever occur. Hence we must regard them as equivalent indeed but unequally distributed. It is further clear that, if this inequality of distribution were very great, the universe would present the aspect of a series of cataclysmic changes, instead of the incessant but gradual change which we know and which is implied in the uniformity of nature. Nor is it possible to conceive that the universe will ever enter upon a period of general and continuous cataclysmic change. The violence of change is proportionate to the resistance offered; hence every cataclysm presupposes a period during which the statical forces have been largely predominant, during which the dynamical forces have slowly accumulated. No rapid and general succession of cataclysmic changes is therefore possible.

These principles constitute, in my opinion, what we mean by the uniformity of nature and the immutability of law. They are indispensable to physics, but they are not empirically verifiable; the only verification of which they are susceptible is just their indispensability. They are principles of the possibility of physical science. Laws of causation, on the other hand, are figurative schemata whereby the essential unity of the universe is bodied forth to the eye of imagination. As such they are not devoid of truth, and indeed of positive truth. An idealist who holds that matter and force

have no existence apart from consciousness is not bound to deny the positive truth of any scientific theory which furnishes the best available explanation of the phenomena it purports to explain. In fact, it is just positive truth which he will allow to such an hypothesis ; *i.e.*, he regards it as a necessary moment in the process by which the human mind comes by the knowledge of the essential unity of the cosmos. Its verification consists in this necessity. Such verification may be called transcendental as distinguished from empirical verification. At the same time he will certainly deny the absolute truth of all such hypotheses. The scientific Pegasus is a noble animal, and his rider extremely bold ; but "post equitem sedet atra cura" ; Nemesis rides on the croup in the shape of the metaphysician, and will not be shaken off no matter how rough the pace may be. Metaphysics, in fact, is related to physics, as physics is related to experience. The ideal world of physics satisfies the metaphysician as little as the world of sense-perception satisfies the physicist. His procedure is of the simplest kind, and consists in merely pointing out that an idea is an idea and therefore relative to consciousness, and that by consequence the entire body of scientific hypothesis has only a relative validity. Those who think otherwise he shows to be still in the bondage of Scholasticism—to be in fact no better than those mediæval thinkers who mistook the connotation of a common term for a real essence residing in things. In short, he pushes the principle of conceptualism to its logical issue. By degrees a dim perception of his meaning dawns upon the scientific mind, and therewith the half-suspicion that he may be right. Accordingly an attempt is made to meet him half-way. Hence arise two schools of scientific thinkers. Both agree in admitting the relativity of scientific theory ; but, while one denies the power of the human mind to reach absolute truth, the other joins hands with those who are only just emerging from the realism of common sense in order to find the absolute in that of which nothing in particular can be said. The first school virtually admits that science is an illusion, and erects its own speculative incapacity into a standard of human faculty. The second differs but by a hair's-breadth from the first, and that difference is not on the side of logic. This poor *caput mortuum*, this absolute, this unconditioned, which it is sought to purge of all subjective elements, after all, it must be admitted, exists, and on this admission the metaphysician pounces with avidity. 'You tell me,' he says, 'that the absolute and the relative are wholly heterogeneous, yet you predicate of both this same attribute, exist-

ence. It is idle to assert that existence as absolute is totally different from existence as relative; for that is merely to admit that your system is based upon an equivocation. Existence, like every other term, denotes an idea, and as such its import is relative to consciousness. You will not assert that the existence of a cognition is anything more than its being known. To assert then that that which is neither known nor knowable exists is simply to contradict yourself. You claim, in fact, to transcend consciousness, and though experience may, consciousness cannot, be transcended. If we could know that the unknowable exists, we should as surely transcend consciousness as if we knew exactly how it exists. You have no logical alternative but either to deny existence to consciousness or to admit that the unknowable does not exist. As matters stand, you are cheating yourself with an abstraction.'

In truth it is not the metaphysician who seeks to transcend consciousness, but the scientific or quasi-scientific thinkers, who cannot see that a term is none the less relative that it is abstract, who surrender to the idealist the concrete world of perception and imagination only to mistake for things in themselves those ideas which of all others are the most attenuated, the nearest to insignificance.

The metaphysician, however, in holding by the doctrine that existence is limited by consciousness, does not mean to deny the existence of the objective universe which science postulates. It is his proper problem to reconcile physics and idealism—a problem which I must content myself on this occasion with thus barely indicating.

IV.—DISCUSSION.

MR. F. H. BRADLEY'S ANALYSIS OF MIND.

By JAMES WARD.

In the last number of *MIND* (pp. 354 ff.), Mr. Bradley has further expounded those views of his concerning general psychology which I had occasion to criticise incidentally in the number but one previous. The main purpose of my article was to exhibit certain imperfections of psychological terminology. For this imperfection, I conceived, the subject-matter of the science is to blame rather than its exponents, and I was fully sensible of the truth of Prof. Bain's remark, that "it will be long ere we attain an unimpeachable phraseology for the highest generalities of mind". Still it seems always worth while to see what is faulty in our work even if we cannot straightway correct it. I ventured accordingly to institute a comparison between the logical exactness of physical definitions and the "varying use of terms involving incompatible implications and the surreptitious changes of standpoint that mark even the clearest psychological writing". It was in this connexion that I came across Mr. Bradley's article on "Attention" in *MIND* No. 43. It was not within my purpose to discuss his views in detail: my contention as regards him was merely that his fundamental conceptions and his method were false; and in venturing now to remark further upon these as they appear in his last article, I do not purpose to touch one way or other on its main theme—the psychological genesis of Thought.

Mr. Bradley's main position, as I understand it, may be stated thus:—All psychical facts are presentations, and,—symbolising presentations as *a*, *b*, *c*,—the laws of psychology are the laws of the interaction of such *a*, *b*, *c*, that is, of their differentiations, conjunctions, conflicts, fusions, associations and so forth. All that is covered by the terms Consciousness or Mind is resolvable into various combinations or relations of these psychical *a*, *b*, *c*: as there is no water till oxygen and hydrogen combine as H_2O , so there is no self or subject and no activity till the interactions of presentations "generate" the appropriate "groups". Mr. Bradley does not merely say: The subject at the beginning does not know itself—a statement which perhaps no one would question. What he says is: There is nothing but feeling there. Out of an originally undifferentiated *x* arise in accordance with psychical laws the subject, objects and activity, which others maintain are implied in the very conception of psychical existence, and which, they hold, must be thought by the psychologist in de-

scribing the individual's development, notwithstanding that the individual himself has no such presentations at the outset.

One reason given for excluding these conceptions from psychology is, that they are neither facts nor laws, but "rags of metaphysics," and "we have in science to do solely with events and their laws". Now if this objection had been urged by some of our excellent friends the physiologists, I should probably admit it at once: they are making valuable contributions to the superstructure of psychology, and it is best not to put them out of conceit with us by raising difficulties, the force of which they would not feel. But with a writer who has given to the world a book on the principles of knowledge it is otherwise. Accordingly I venture to request that writer to consider and to explain to us what he understands by "doing in science"; and in the meantime confess that I have assumed that science deals with facts only by means of ideas. Brute facts will never make a science of themselves, and we cannot get ideas out of them till we have put ideas in.

Further, when the physiologists (for whose superior ability and surpassing devotion, by the way, Mr. Bradley has extraordinary respect) talk of rags of metaphysics, we know what they mean, and take their rebukes meekly. But from a philosopher we reasonably look for more precision. It is one thing to keep science clear of ontological speculations; it is quite another to refuse to give adequate definitions of conceptions that have various implications within science itself. The first procedure is wise and sober; the second is slovenly and confusing. We may be quite sure the first is what Mr. Bradley intends; but then comes the question: How are we to ascertain the conceptions that for psychology are simple and ultimate? So far as I can see, Mr. Bradley does not tell us. My own view was that those conceptions, and those only, are ultimate for a particular science, whether actually so or not, which, like compound radicals in organic chemistry, so to say, never require analysis within the science itself. Tried by this test, Mr. Bradley's "working definitions" prove insufficient.

In all other sciences the term 'phenomenon' and its equivalents may be used without more ado: in psychology they cannot. Now, Mr. Bradley talks of presentations as if they were simply phenomena: he proposes to "take 'given' or 'presented' not as implying a donation or even a relation to an Ego, but rather for that which is simply" (p. 364, *fn.*). This is all very well when we are busied with the external world; for, though it is obvious that given and presented always *imply* donation or relation, yet the term implied can be neglected when we are talking of sounds, or colours, or storms, or trees; they are there for anybody and everybody, for nobody in particular. When, therefore, we speak of 'chemical' phenomena or 'astronomical' phenomena, it is only to distinguish one kind of phenomena from another. But

'psychical' does not qualify phenomenon simply in this sense. A psychical event is not a mere *a* as distinct from a chemical event which is a *b*, or an electrical which is a *c*; for *b* and *c* become psychical events so soon as we regard them as part of the experience of a particular M or N. This is a point that seems past all disputing, as even Mr. Bradley's own language may serve to show. Psychology occupies what I have called the individualistic standpoint,—not by way of excluding metaphysics, as Mr. Bradley supposes, nor by choice at all, but of necessity, in order to be psychology. And this necessity asserts itself, I say, in Mr. Bradley's definition of his events as "the facts immediately experienced within a single soul or organism". "'Experience,'" he adds, "is not definable: it can only be indicated." Very good; let it be indicated. To what will Mr. Bradley direct us? Will he say: 'The sun shines, Honey is sweet: these are facts, are experience'? Is it not obvious that he will say: '*You* see or feel the sunshine; *That bee* tastes the honey-sweet, or the like'? In other words, "immediate experience within a single soul or organism" is not *a* or *b*, sunlight or honey-sweet simply, but *a* or *b* as they are for some sentient, percipient or intelligent subject. I have endeavoured to express this symbolically by saying that the psychical fact is *Spa* or *Spb* or generally *Spo*. The difference in question is recognised in the old scholastic distinction of *esse reale* and *esse intentionale*, and more ambiguously in the modern one of subjective and objective. Half the problems of philosophy spring from this difference, and if it could be resolved into a difference of phenomena we should have heard the last of such problems long ago. It may be that the difficulties which have so often driven speculation from idealism to realism, and from realism back to idealism, may never be resolved; but this is no warrant for trying to suppress a distinction which is, so to speak, in the nature of things. I have never said that psychologists should be idealists as metaphysicians; but that they do and must occupy an idealist standpoint in scientifically expounding the facts of mind, just as the physicist does and must occupy a realist standpoint in treating scientifically of the facts of matter. It is the endeavour to transcend this dualism, not the frank recognition of it, that is really an intrusion of speculation into science.

Within that important department of psychology occupied with the quality, duration and intensity of presentations, or with their interactions—"the machinery," as Mr. Bradley calls it—it is often convenient to regard a presentation as *a*, or *b*, or *c*. But before we have done with psychical facts, we have to take account of what is meant by "immediate experience". Whether or no they can settle "the amount of continuity and ideal identity required to make a single soul," Mr. Bradley, and psychologists too, have to admit, tacitly at least, that presentation implies consciousness, and that consciousness implies a subject and activity.

Herbart, who may be said to have suppressed the old tripartite classification into cognitions, emotions, volitions, only made the more prominent the distinction between the *vorstellende Seele* and its *Vorstellungen*. Our English Associationists again, with whom Mr. Bradley is anxious to make his peace, have allowed full weight to the old classification, though they have refrained from emphasising the implication of a subject which it contains. Mr. Bradley alone would sweep away both entirely, believing that what might be called Presentationism will suffice; and for him, it is to be noted, a presentation is supposed to imply no relation to a subject but is "that which is simply and comes as it is".

This position is so little in keeping with Mr. Bradley's general theory of method that one is almost tempted to regard it as a wilful *tour de force*. Thus in one place he says: "The absolute truth in the light of metaphysics, because it will not work, must not be let in". On the other hand, to those who brand a useful assumption as falsehood he replies: "If a fiction, it deals with the facts. Let psychology mind its own business."¹ Why should not this language be used of the conscious subject, which, whether fact or fiction itself, certainly works and enables psychology to know its own business? Nothing would have seemed more natural for Mr. Bradley, with his views of working definitions and useful hypotheses, than to say: 'The conception of a subject, soul or self, that is aware of what is presented, receives what is given, and either seeks or avoids, according as it feels pleased or pained—this universal postulate of common-sense may be a fiction, but it deals with the facts: debar me from its use, and I must talk of psychical processes as I might of fermentation or electrolysis. Whether individual minds are modes of one Infinite Mind; whether their individuality is one of form and has varying real constituents; whether the mind that I am for myself is matter for everybody beside; whether the energy of the physicist is but another aspect of what the psychologist calls will, and the law of least resistance another side of pleasure and pain—whether propositions like these or their opposites are true in the light of absolute metaphysics, is entirely outside empirical psychology. The assumption of a conscious subject as a working conception can be kept clear of such questions just as the conceptions of substance or cause can be kept clear of analogous speculative difficulties. "If we do not define by the organism," i.e., help ourselves out with scraps of physiology, "we must use the word soul or mind;" and if we are to avoid "rags of metaphysics," such as talking of "what is simply and comes as it is," we must define the soul as "a totality of *immediate* experience". And it must be plain to all but "barbarians" that such a continuous

¹ Soberly put, this is very much my own position. I have developed it at more length in an article entitled "A General Analysis of Mind," in *The Journal of Speculative Philosophy* for 1882, pp. 368-370.

identical totality is not a mere sum or series of experiences, *a, b, c, d*; but that, contrariwise, these experiences only become a whole when regarded as the experiences of one to whom pertains whatever activity experience implies.' However, we must take Mr. Bradley as we find him, and he refuses to distinguish psychological facts from others by the characteristic of subjectivity.

Passing from the definition of psychology to psychology itself, Mr. Bradley maintains that the relation of subject and object is not essential. The properly psychological reasons given for this call for special consideration. It is urged, "in the first place, that in verifiable experience we occasionally have states where this relation of subject and object wholly ceases to exist". But the main point is put in the following questions, which Mr. Bradley asks to have fairly met:—"Where experience does give us a reference to self . . . that self has always a content. . . If this reference exists at the start, what is the content of the subject? Is it likely that experience, at its poor and blurred beginning, does divide itself into two parts with a relation between them; and if so, what fills each part, and what machinery can at once effect this distinction?" (P. 365, *fn.*) An answer to these questions sufficient to rebut Mr. Bradley's main objection is not, I think, difficult, and shall be attempted presently; but, in fact, these questions are only formidable on account of the preposterous misconception, as it appears to me, on which they rest. In defining psychology, Mr. Bradley identified presentation with existence simply: he now identifies existence with mere presentation. Accordingly there is no self or subject except where there is self-consciousness and so long as there is self-consciousness. 'Once upon a time there was Nobody and Nothing; but after several adventures Nobody received sundry interesting presents, and picked out several things, albeit he remained Nobody still. By and by, however, thanks to their strange collisions, there somehow supervened a mirror, and then Nobody managed to distinguish himself, and was Nobody no more.' A philosophic little romance in this style seems to be at the bottom of Mr. Bradley's assumptions. Before answering his questions, therefore, I should have to ask him if he admitted the distinction of (1) self as existing, or, if he prefers it, self as knowing self, and (2) self as known by self; and I should have to ask him again if he admitted that terms such as Presentation, Experience, &c. (which we may symbolise by O), are necessarily relative to something else (which we may symbolise by S). If he denied these distinctions, I should ask him, without them, to make but one of his clauses clear—*viz.*, "Where experience does give us a reference to self". If he allowed them, I think his first point would be sufficiently disposed of by saying that it simply meant:—We are not always self-conscious; "a reference to self" is not an invariable portion of what is given us. Turning to his "main point," I should ask leave to call his attention to a remark I ventured to urge upon his notice

before (No. 45, p. 62), *viz.*, that a machine is not itself a motive power. Then, if he rejected the distinctions just mentioned, I should ask him to explain how he conceives the relation of experience, whether poor or rich, that is no one's experience to the machinery that divides it into somebody and what somebody experiences. If he accepted these distinctions, I should propose to recast the question, which, as it stands, is ambiguous. "What is the content of the subject at the start?" I should take to refer to the psychologist's conception of the subject as *esse reale*, and I should reply: The subject is, at first as always, that which lives, which thinks and feels and acts, which attends to and is pleased or pained by its sensations and movements. The question: By what machinery does experience at the beginning divide itself into two related parts, subjective and objective? would also require emendation. Experience does not divide itself, but is so divided because of the interest of the subject in certain presentations and in certain relations of presentations. If we could imagine a subject incapable of pleasure or pain, but otherwise passing through the same experiences as ourselves and provided with the same machinery of "regularities, redintegration, blending," &c., it is difficult to see how the differentiation of subject-experience and object-experience could ever begin. How it has begun and developed for a subject that feels and that acts under the prompting of feeling is a question Mr. Bradley deals with himself (pp. 368 ff.). Here in the main we agree,¹ except of course that Mr. Bradley thinks he has disengaged himself of the difference between the *esse reale* and *esse intentionale* of the subject. But where this difference is itself in question, to argue that at the outset there is no subject because "for the soul" there is then no distinction of self and not-self, might be characterised as *Ignoratio Elenchi*, *Contradiccio in Adjecto*, or *Petitio Principii*, according to the reader's taste.

In keeping with this rejection of a subject that acts and feels is Mr. Bradley's further doctrine that activity, as well as feeling, is a mere presentation. Wundt's theory of apperception he holds beneath contempt, and the present use of the term "activity" is, he insists, "little better than a scandal and a main obstacle in the path of English psychology". I should have thought the chief obstacle in the way of English psychology had been its neglect of psychical activity, and the chief merit of psychology in Germany had been essentially that very doctrine of apperception which, as developed by Wundt, Mr. Bradley is loath to criticise. He demands a definition of activity, and offers one of his own. For my part, I doubt if activity can be defined in terms that do not already imply it. Mr. Bradley's definition (p. 371 *fin.*) is so far from clear to me that I am driven to suspect some

¹ Cp. *Ency. Brit.*, art. "Psychology," pp. 84 ff.

clerical error. What we mean generally when we use 'activity' is, he thinks, "an alteration of A not taken as belonging to anything outside, but as a change of something beyond A which realises something which in A was ideal." From this "general idea" of activity "we come to the soul and the perception of our own activity," and naturally expect the general idea will now be rendered more definite. But not one word does Mr. Bradley tell us of the *meaning* of psychical activity ; there is only the old aimless contention that the soul cannot be conscious of the activity implied in consciousness without some apprehension of a concrete self, &c.; in other words, that psychical life cannot begin with reflection. "The minimum that must be *apprehended*" is "a concrete and limited self-group, and a following alteration of this as against its limit". It must surely be plain to everybody but Mr. Bradley that the apprehension of this minimum is itself an action, and none the less distinct from the said minimum because the act is that of apprehending an act. But Mr. Bradley is evidently equal to the feat of moving the world without a $\piον\sigmaτω$: to get into a basket and carry himself would be nothing to a philosopher who resolves himself into his own presentations. If Mr. Bradley had made clear to us what we are to understand by "apprehended" in the passage quoted, he would have done more to remove the scandal of which he complains. If he were now seriously to attempt this, he might find the obstacle not so much disgraceful as ultimate and insuperable. Certain differences between one kind of activity and another may be known : we may distinguish, e.g., thinking from moving, recollecting from expecting ; so far, that is, as they are differences in presentations or in their interactions. But the common fact in all—which I have called, perhaps miscalled, Attention—cannot be known *per se*; for it is neither a presentation, nor a relation *among* presentations, nor, strictly speaking, an unanalysable element in the presentations themselves. An unanalysable element in every complete state of mind it is, I admit, but one which even in reflective consciousness is not directly presented. I see no very serious objection to saying that all that we know *about* it is an "intellectual construction," or an interpretation, or even an inference, provided it be allowed that every proposition in psychology when completely explicated becomes nonsense if this "inference" is rejected. I allow further not only that it is a most difficult problem for psychology to ascertain how such "intellectual construction" as a *state of mind* has arisen, but also that it is entirely a question for epistemology to determine finally its validity as *knowledge*. But if science is to precede philosophy and to furnish its material, then empirical psychology, in order "to deal with its facts," will have to recognise, and always does recognise, that unanalysable element I mean by attention or psychical activity. It will have also to distinguish, and, in fact, always does distinguish, this attention

from its objects, the presentations attended to. Other terms may be used—thought, sentience, consciousness: this unanalysable activity may be confounded with its object, as was done by the faculty-psychologists with their powers of perception, conception, and what not; but the activity is there all the same.

But if it is unanalysable, why call it activity rather than anything else? asks Mr. Bradley. This question implies that activity has a meaning apart from psychical activity, and such is, as we have seen, Mr. Bradley's opinion. The contrary, I should have thought, was nearer the truth: all terms implying action as distinct from mere happening are commonly regarded as anthropomorphic. That is to say, this unanalysable psychical element is taken as the type and source of all other conceptions of activity: they involve it, it does not involve them. It is quite true, however, that the current conception of activity is derived from the "active process" rather than from the intellectual, and it is in every way reasonable to ask whether there really is activity in both, and a common activity. But I have already dealt with this question (No. 45, pp. 58-61).

Mr. Bradley has still an objection: Suppose your analysis admitted, and that all psychical activity is fundamentally one—attention to presentations; still you have only substituted one faculty for several; "the vice of admitting faculties is there all the same". In the first place this is a serious over-statement: it would be a very real gain to psychology if its facts could be so far simplified, a gain comparable to the simplification in physics obtained by the modern conception of energy. Mr. Bradley might as well cavil with this because it still uses the term force. But further, the vice denounced is not chargeable against the analysis I am defending. It is not proposed to *explain* psychical facts by *assuming* a faculty beyond them. All that is meant is that in every psychical fact there is a subject attending; not that beyond these acts of attending there is a potential attention. The subject is not regarded as merely *capable* of attention and as attending, when it chances to attend, by means of an appropriate faculty; but it only is an actual subject as it actually attends. Mr. Sully and Prof. Wundt can speak for themselves if they think it worth while; but for myself I entirely repudiate Mr. Bradley's account of my views. Nothing so fatuous as confounding an analysis with an explanation is fairly chargeable against me. I might as well accuse Mr. Bradley of mythology because he talks of the laws of Contiguity and Blending as working thus and thus.

In my remarks (No. 45, pp. 66 ff.) on Mr. Bradley's earlier article (in No. 43), I tried to show that the account he gave of the origin of the conception of activity confirmed, in spite of him, the analysis he was seeking to overthrow. Mr. Bradley has modified this account in one important particular, but excuses himself from entering further into my criticisms, because he

looks to his last article (in No. 47) to clear up what he thinks I misunderstood before. That I do not understand Mr. Bradley's analysis I fully admit; but I do not believe I have so completely misunderstood it as to exclude my remarks from all claim to consideration. However, as the point is important, I will try, now that I have compared both articles, to restate the particular objection more clearly. Mr. Bradley is showing how the idea of activity originates. It is brought out of a certain basis by means of a certain machinery. Of this basis it is hard to get a clear account. On p. 365 it is "a whole that expands and contracts, and *feels* pleasure and pain". On p. 367 it is "a whole given without relations ['given' we must remember = 'is simply'] and given therefore as one with its own pleasure and pain". On the former page we are told that pleasure and pain are presentations, and on the latter that "presentation has two sides, sensation and pleasure and pain". In the account of the machinery there is a like confusion. After describing the working of association in the "improved" form, Mr. Bradley continues: "Turning now from these conditions to *one not mechanical*, though hardly ideal, we reach the influence of pleasure and pain. That these work seems certain, but the way . . . is still matter of controversy, and I shall pass it by!" Now, it makes all the difference in the world whether pleasure and pain, like intensity, duration, &c., are sides or aspects of every presentation, or pertain only to the whole that expands and contracts and which is said to feel. Further, if pleasure and pain work in a way not mechanical, we ought surely to have some general notion what this way is, especially if they belong to the whole that feels, rather than to the elements that struggle about company, and whose collisions are said to "*cause* pain and unrest" (p. 360). However, in spite of this initial obscurity, Mr. Bradley's exposition will be more lucid as we go on. Certain sensations, which continue to be one with pleasure and pain, become closely united into a "feeling-mass": from this the other groups in which the feeling-aspects have been loosened by repeated collisions become dissociated and contrasted. Supposing the primitive correlated whole resolvable into I and O (inner and outer), we may say then that we have now I + F set over against O - F, the group that has kept its feeling-aspect and the rest that have lost theirs. And now the idea of activity is about to emerge. But let us, to be sure there is no conjuring, note once more: (1) that the only materials are I + F (or some presentations it may contain) and O - F (with, in like manner, its latent differentiations); (2) that these and their constituents are ever struggling towards an independent totality, this striving of every mental element being the only active principle that is even tacitly admitted; and (3) that the laws of its working (coalescence, redintegration, &c.) are the machinery we are expected to understand. It is altogether a singular inventory for a psychologist

whose first fiat was, "Atomism must go wholly," and who feels at liberty to denounce Herbart's "audacious assumptions and complicated fictions". But to proceed. Since $I + F$ and $O - F$ are all the presentations there are, we naturally expect the constituents of activity to be found among them; and so, we are told, they will be if we assume that $I + F$ "is perpetually growing larger or smaller as against other elements [$O - F$], and . . . that the expansion gives *in general* a feeling of pleasure, while contraction brings pain". Having "assumed all this and passed over the difficulties which of course beset it," we learn next and last that "this expansion of our area beginning from within gives a certain feeling, and it is interpreted as a putting forth of a something from out the self into the not-self—the something being [named] energy or force or will . . . in fact, of course, being nothing at all" (No. 43, p. 320). In his first article Mr. Bradley was of opinion that there must be an idea of the expansion and that "this idea, or end, must lead to the change". But he now thinks this was perhaps going too far: all that seems really necessary is "a concrete and limited self-group, and a following alteration of this as against its limit" (No. 47, p. 372).

Mr. Bradley is fond of metaphors, and sometimes warns us that his terms are not to be strictly taken. Unhappily he has not elucidated what he intends by the expansion of a group of presentations against its limit, or by the seemingly superfluous qualification that the expansion begins from within. The group $I + F$ might increase in intensity; but such an expansion could not be said in general to give or "to be connected with" pleasure, especially if bodily sensations are a main constituent. This group might also increase by means of fusion and redintegration, forming "a whole possessed throughout of such a content that it suggests nothing out of harmony with anything else" (p. 360); and when this does happen, Mr. Bradley has already told us pain and unrest cease. But let the reader think of any such case of simplification, identification, recognition or the like, and say what there is in it—I ought not say to "give" or to "suggest" but—to be a certain feeling possibly interpretable as a putting forth of something from out of the redintegrating group into another. Nay, I would ask him to consider what possible meaning can be given to such "a putting forth" so long as we exclude everything but presentations and their interactions. For my own part I not only fail to understand Mr. Bradley's natural history of the idea of activity except by admitting elements which he most emphatically excludes, but, giving up the attempt to understand it, I cannot even imagine the state of mind to which his description applies—*viz.*, that it is an "expansion" which in general "gives" pleasure, and at the same time "gives" a feeling interpretable as energy, force or will. Pleasurable "expansions" are frequently passive, and "expansions," interpretable as exertions of force or energy against a limit, as frequently painful. Moreover we often

enough have a feeling so interpreted when the self-group contracts instead of expanding. To me Mr. Bradley's exposition in detail reads like an unintentional travesty of Herbartian psychology by one who has tried to improve upon it without being at the pains to master it.

But the objections I urged before are independent of its details and are not removed by the omission of all reference to final cause, to desire, or to the distinction of real and ideal. Much as Mr. Bradley strives to get all his facts into the one plane of presentation, his language continually shows that he has to admit other facts outside that plane. But the consequences of this admission seem to me hidden from him by the ambiguities of the words "feeling" and "given". Perhaps, too, that 'slippery word' relation, as Professor James happily termed it, must bear a good deal of the blame. What is "given" is sometimes what there is for the psychologist, and sometimes what there is presented for the subject whose states of mind the psychologist describes: Mr. Bradley seems never to know which of these two standpoints he is occupying. As to "feeling," a collation of passages would show that with Mr. Bradley as with the rest of mankind pleasure or pain is not anything in itself. Neither is it an attribute of presentation comparable with intensity, duration and quality, or else it would be as much a contradiction to talk of presentations that had lost their feeling-aspect as it would be to talk of presentations that were *minus* intensity, duration or quality. From the whole that feels, however, feeling cannot be separated. So far from being presentations, pleasure and pain are rather the effects of presentations on this self, "brought" or "given" to it by them. This absolute and invariable subjective implication of the word feeling cannot be disposed of by calling feelings presentations, so long as it is true that all other presentations have or attain objective implications, and feeling proper never does. And it is because of this subjective implication of the word that what is interpreted as energy or will Mr. Bradley, as it were instinctively, calls feeling too. This fact also is outside the plane of presentation proper. Everybody would see at once that to refer the origin of the idea of activity to an expansion that was only presented would be almost a contradiction: when the expansion is said to "begin from within and to give a certain feeling, &c.," it is not so evident that only presentation is meant, and that the order of events is first the expansion and then the feeling of effort!

But, as just said, the word "relation" it is, I suspect, which has served Mr. Bradley the worst. A writer who essays to settle the fundamentals of a science like psychology, and in particular to exhibit the analysis and genesis of such a conception as activity, had need be very careful with this word "relation". But it never gives Mr. Bradley a moment's pause. Psychology is concerned only with certain facts, "regarded merely as events which happen," and these facts are presentations or "*relations existing between*"

presentations.¹ Now it seems to me that some reflection might have shown Mr. Bradley that relations are not generally events—that of subject and object is not—and that relations between presentations often do not “exist” (*i.e.*, are not given) till they are made. So far from activity being resolvable into a relation between presentations, it is not possible, I maintain, to explain the psychological relations of presentations except we start from psychical activity. I cannot do better in this connexion than quote a passage Mr. Bradley has himself cited: “In the very lowest stage of psychical existence we can still point to a central activity, and verify there a rudiment of inference. And a soul, so far as we are able to see, would be no soul at all if it had not this centre.”² “An inference,” this same writer elsewhere explains, “cannot wholly come in from without or be passively received.” Between inferring and relating, it need hardly be said, there is more than an etymological connexion.

To sum up: In spite of his great astuteness and ability, Mr. Bradley has, it seems to me, involved himself in inconsistency and confusion, because he has not merely forsaken all speculation, but repudiated also the fundamental conceptions from which speculation starts: his procedure is much like bleeding yourself to death to guard against blood-poisoning. A cursory survey of knowledge discloses two limits—what is beyond our reach and what is too near to reach. The nearer limit only affects psychology, and Mr. Bradley, in essaying to treat psychology as a natural science, has ignored this peculiarity: because he can't see his own eyes, he seems to think he must say he hasn't any. He denies activity to mind as a whole, but allows its elements to struggle towards an independent totality. Out of this psychical machinery he tries to develop its own presuppositions, and smuggles into it what is really distinct from it and is its only motive-power. The plausibility and the hopelessness of such a task suggests a certain parallel to the old dreams of perpetual motion.

¹ Mr. Bradley, supposing me to have said that activity contains a relation, invites me to say, further, whether the terms of the relation are presentations; or, if not that, what else they are—as if no other possibility were conceivable. All I meant was that an act of attention may be simple and original, albeit the conception of it is composite and derivative, not possible till we have first acquired the ideas of a self and a not-self, and got to know that changes in the latter ensue upon modes of the former—a point irrelevant enough to the main question, on which Mr. Bradley keeps insisting still.

² *Principles of Logic*, § 3, p. 456.

ON FEELING AS INDIFFERENCE.

By Professor A. BAIN.

The question whether we have states of mind properly describable as Feelings and yet neither pleasurable or painful, is at this moment answered in opposite ways by psychologists. Yet very large consequences seem to depend on it; and any hesitation as to the side that we ought to take may mean that we abandon the discussion of some of the vital problems of Psychology. I write the following lines with the hope of eliciting some further discussion on the subject in MIND.

It is not wholly a question of definition. There is a strong temptation to make it so. In the unavoidable vagueness of subjective phenomena, it is a great relief to have a few cases of unmistakable preciseness; and among them we may note the distinction of pleasure and pain. Although these are ultimate facts, and cannot be defined by analysis, they are not the less decisively marked out in our consciousness; they are never confounded either with each other, or with states that are neither. Hence a generic name that comprehends those two states as its species is a well-defined genus. To treat Feelings as made up of Pleasures and Pains is to leave no doubt or uncertainty as to what we mean by the word. We seem to have got triumphantly over a difficulty of no small amount. After 'Consciousness,' the word 'Feeling' is one of the serious troubles of psychological definition.

This solution, in spite of its advantages, is not universally accepted. For example, Reid divides feelings into the agreeable, the disagreeable and the *indifferent*, and considers the last-named class to be the most numerous. He exemplifies them by referring to those of our sensations that serve no end but to mark difference, as in distinguishing one human voice from another.

Now it will probably be allowed that these states are very often quite indifferent as regards pleasure and pain. This, however, is not decisive. Considering their exclusively intellectual significance, we might refuse to class them with pleasures and pains under the genus Feeling, and might insist on placing them entirely in the sphere of the Intellect. We might call them intellectual sensations or sense-presentations, and regard them as the antithesis of Feeling and as not proper to be included in the region of mind so denominated.

In fact Reid omitted the case that gives strength to his position; that is to say, he left entirely out of account the fact familiarly known as Excitement, upon the exact import and bearing of which the question finally rests. None of Reid's instances would fall under this designation; while it covers

modes of mind that may have the smallest possible intellectual value, so that there would be a want of propriety in attaching it to the domain of intelligence.

It is, however, questioned by many "whether any feeling as such can be indifferent" (Sully). To this I would say that I can agree to regard no feeling as indifferent, in the same way that I can admit that there is no such thing as a perfectly straight line or an exact circle. I would not affirm absolutely of any mode of consciousness, call it feeling or anything else, that it is wholly devoid of either pleasure or pain in an infinitesimal degree. But psychology, like law, refuses to deal with minima or infinitesimals : we must have factors of such an amount as to be a felt influence on our mental doings. In this view I contend for the existence of neutral states in the greatest plenty ; not merely Reid's comparatively tranquil intellectual sensations, but outbursts of voluminous emotion that agitate and engross the whole man as only feelings strictly so called can do. Nevertheless, in order to do full justice to the proofs of this position, I must make an important admission as to the frequently mixed character of excitement.

My meaning is this. When we are what we call excited, it very often happens that we have a certain amount of either pleasurable or painful consciousness, or we may be passing rapidly from one to the other. But here is the point. Is the degree of conscious pleasure or pain necessarily and always equal to the degree of the excitement ? To this I think the answer must be in the negative. Our power of introspective discrimination and mensuration is quite adequate to prove to us that the pleasure or pain is one thing and the mental agitation or excitement another thing : the two do not rise or fall together.

A contrasting illustration will be of service here. Take a few smarting pains—such as the sharpening of a saw, the pricking of the skin, the odour of assafetida, the taste of salts and senna, a scald with boiling water. In those cases we are undoubtedly excited. But excitement is not the word we use ; we prefer the term 'pain,' pure and simple. The entire consciousness is pain and nothing but pain : as is the excitement, so is the pain ; the coupled facts, which are usually present and distinguishable in consciousness, are here one fact ; the two modes are coincident ; the excitement does not overlap the pain. All this of course is most strictly applicable to the first moments in each case.

Now, instead of such pains as the sharpening of a saw or the squealing of parrots, let us take a voluminous noise, say the discharge of a heavy gun, the rattle of thunder, the din of a London street, the noise of a mill-flat. These effects are rousing or exciting : they are not necessarily painful, although apt to be so. In certain states of the nerves, they may even give pleasure for a time. Yet the excitement is the main fact ; the pain or the pleasure is but a chance incident. The state is one of mental

disturbance, agitation, conscious intensity ; its opposite is quiescence or calmness. It seizes possession of the consciousness ; excludes rival claims to notice ; governs the thoughts and, through them, the actions. All this happens without taking into account either pain or pleasure, which may or may not be a controlling factor.

Take, again, the excitement that prevents sleep. This, by the very fact, is a formidable mode of consciousness. There may be a mixture of pleasure or pain, but certainly not co-extensive with the mental disturbance. If it were pleasurable in the whole extent of the awakened consciousness, we should not wish to part with it ; if it were painful in its whole extent, like the instances of acute pain formerly given, we should use in describing it language very different from what usually contents us.

These two examples are as good as a number : the same terms are equally applicable to the generality of instances of what we understand by excitement. It is the absence of reference to so important a region of our mental life that makes Reid's elucidation of indifferent feelings radically defective. Even without the class of cases that he fastens upon, it is strictly true that the Indifferent modes of feeling, including the indifferent element in mixed feelings, far outnumber and outmeasure the pleasurable and the painful in everybody's life. In saying this I am willing to discount not merely the intellectual sensations, but the peculiar species of indifference under the attitude of pursuit, when we are so engrossed with action as to be scarcely conscious at all, in the full sense of consciousness, as feeling. Intense objectivity of regards, as in a race or an engrossing operation, is not, strictly speaking, unconsciousness, but it is the maximum of energy with the minimum of consciousness. It might be treated as a mode of indifference, but it has a character of its own, and is better kept distinct from feeling as excitement. It readily becomes excitement ; but whenever the objective tension is remitted, we relapse into subjectivity, and the consciousness is then sufficiently intense and may be called excitement in the true meaning, while liable to be at the same time pleasurable or painful, under the qualification already given.

I have always contended for the continuity of neutral excitement and feeling (in Reid's view) as discriminative sensation. This I consider necessary to complete the characters of neutral or indifferent feeling, and also to constitute the transition between Feeling and Intellect. I do not dwell on this topic at present, but content myself with noticing the serious inadvertence of regarding the genus 'Feeling' as made up exclusively of pleasure and pain. It would be an immense advantage to coin a word that included this all-important couple and excluded everything else. But to apply the word 'Feeling' to this purpose is to carry on an unequal fight with inveterate use. It is not even as if that word were commonly limited to the trio of pleasure and pain and excitement

that is neither: force has to be brought to bear upon popular usage to impose even so much limitation.

The inclusion of the neutral modes, along with pleasure and pain, in the one genus 'Feeling,' must be logically justified on the ground of the importance of the points of community of the three species. Having implicitly handled these in the previous discussion, I need not dwell further upon them now.

WHY DO WE REMEMBER FORWARDS AND NOT BACKWARDS?

By F. H. BRADLEY.

To the reader who is new to this question it may wear the appearance of a paradox. He may reply that to go forwards is obvious and natural. But if I ask why should my memory go only one way, why should memory move never from the present to the past—he may find that what seemed obvious seems now merely false. Still, if he attends to the subject and confines himself to bare memory, if he discounts, that is, the cases where we reach the cause from the effect, or in general reconstruct a whole from its interdependent parts, he is likely to admit the existence of the problem. And he may accept the conclusion that the reproduction of a series has but one possible direction, from the earlier to the later. Whether with Prof. Bain he will add this tendency to a long list of "ultimates" (*MIND* No. 44, p. 469), or will try to find some explanation, I cannot foretell. For myself, though I of course accept the fact of this general tendency, I am not sure that it has no exceptions. I do not believe in the *impossibility* of remembering backwards, and even doubt if sometimes that does not happen in fact. And, so far am I from accepting our habit as an ultimate, that I venture to find no difficulty in seeing how it was acquired, or at all events may have been so.

I ought perhaps to begin by attempting to explain how it is possible to reproduce a time-series at all. This would be a far more serious task, and I cannot here undertake it. And so the question must be simply as to the direction of the recall. Yes, a reader may suggest, the problem is, Why, when time itself goes forward, memory is tied also to that direction. But this is not the way to put the question, and we must begin by purging ourselves of such ideas about time. The stream of events does not really run from the past into the future, and it is easy to see that this flow is our own construction. We find, on reflection, that we really do not perceive the future and the events past and present streaming onwards and into it. What we think we see, upon reflection, is a succession of events, in which what we call the present constantly, in part at least, becomes new, and in part slips away backward into what we call the past. And this con-

struction, by which time flows backward in a stream, bringing new things from the future, and carrying old things to the past, is more natural than the former one (Lotze, *Metaph.*, §§ 138 ff.). Indeed the reader at this point may define the problem thus—Why, since events go backward always, does our memory of them always takes the other direction?

But further reflection shows us that this question still has failed to see the point to be explained. In speaking of a stream of time, we forget that a mere stream, if regarded by itself, cannot have a direction. It does not flow towards one point rather than another, or indeed towards any point at all. And hence, until we have more than a mere stream, until a qualitative point is taken as an end, there can be no meaning in direction. Again, a stream, if it is to be a real stream, must possess an identity of what flows. If we did not have the same water in different positions, if we had always other waters, then to speak of a stream would be to use words without a meaning. We must try to apprehend more clearly what is implied by such a phrase as a current of events; and let us help ourselves with the following scheme: — *abc* — *acd* — *ade* — *aef* — *afg* — .

In this we may regard *a* as being constantly increased or continually diminished. We may look on the original position of *a*, with its earliest possessions, as receding backwards with each change, or, on the other hand, as going forward and as gaining constantly. And the difference comes from the way in which the new is considered as standing to the old in the different cases. But again, if we please, *a* may be stationary, and the stream may flow past it, as—*bc* — *cd* — *de* — *ef* — *fg* — . What then is the direction of the current? It may be running for ever into an ideal reservoir, say on the left hand beyond *bc*, or going forward continually to a point on the right hand beyond *fg*. Thus, if the stationary *a* be one of the Egyptian pyramids, it may seem grounded and left behind, while events have flowed forward, or the survivor of a tide which has swept all else back into oblivion. And, since all motion is relative, the stationary (we must remember) seems in certain conditions to take on an opposite movement.

But, I fear, the reader has had enough of these formal reflections. It is not a stream in general which we have to do with, but the stream of *our* events. And here we have the essence. It is our psychical states which furnish both the flood and all the matter which flows or which stands against the stream. In the succession of these states it is the group of self, more or less unvarying, that has the place taken by *a* in our scheme. And it is the attitude of this group towards the incoming new presentations on which everything turns. It is this relation which gives a meaning to *direction*, and shows the essence of our problem. Why is it natural for us to look upon Time as running forward? It is because *we* go forward with it, marching willingly to our

increase or dragged captive to our decay, but in either case going to meet fresh experiences. Or why does Time run backward from the future? Because *we do not* go back, but still hold our own against change, and force the incoming to minister to our constant identity. And Time goes backward once more when our life slips backward with it, when what we are appears a stone that marks the growing space beyond which our self for ever recedes from us upon the ebb. But again we may be stationary through some blessed hour, anchored in some quiet backwater, a still eddy beside the torrent of things, out of the world,—so we feel it. Here, if events hurry forward to the future, or are whirled backward into the abyss, it is all one to us, since we ourselves *are*. But we are stationary once more, when all we have fails to interest and when the new seems merely old. It all (we feel) makes no real difference, is all the same thing over again; *we do not move*; and, if events go forward still as they did before, or if, on the other hand, it is nothing new that is coming from the future—is a question that is indifferent. Time has here again hardly a direction.

Let us turn now to our problem about the order of reproduction. We have seen that the direction of mere Time does not help us even to ask the question rightly. And we can see now better how to ask it. Why is our memory directed towards our incoming sensations, and towards the side from which change comes? It is so (we may say, in the first place), because our thoughts in general naturally take this road. And why they take it appears to me almost obvious. The answer, in a word, is practical necessity. Life being a process of decay and of continual repair and a struggle throughout against dangers, our thoughts, if we are to live, must mainly go the way of anticipation. This, when we attend to it, seems quite evident and a mere commonplace. In a creature placed low down in the psychical scale no such thing as memory can even exist. And, though to say that its thoughts are occupied with the future would be barbarous psychologically, still the ideal qualifications of its sensations correspond in the main to future changes of its state by approaching sensation and action. And, if this were not so in the main, of course the creature would be destroyed. And hence, when after a long time memory is developed, it naturally takes the habitual mental direction. We are like a boat anchored on a tide, a boat that ceaselessly decays, and that, to maintain itself, must gather material from what comes floating down; and not only this, for there sweep down impending masses which threaten it. Now if, in order to gather material and to ward off destruction, we turned habitually towards the wrong end of our vessel, how, if such a thing were possible, could it fail to make an end of us. And then, when after a time we get strength to rest, and to recall some great benefit secured or great danger avoided, what is more natural than that still our thought

fronts the same way, and, fixing an ideal point behind, goes on forward to meet again past experiences face to face. We have no practical interest in the mere course of events, and merely to drift with it can be nothing to us practically, even in imagination. We are concerned practically with what meets us and what we go to meet, and this practical concern has formed the main habit of our thought. This, I think, is the real solution of our problem.

And we must remember also that a backward direction in thought is the road away from our present selves. These present selves interest us most, and in the main we tend to see the past in its relation to them, and so to take the path forwards from the past that brings us home to them. But if we felt that our selves were lying in the past, we should so far tend to go back. Thus in old age or under abnormal conditions, where the present interests us little, we are said to live in the past. But here recurrent natural wants must still keep up in the main the acquired habit of our minds.

Our thoughts seem really to go back when the exclusive object of interest is placed far behind us, and we retrace towards it every unwilling advance that has carried us away. Each event adds a link, but our mind moves from each later link back to the earlier; we are interested in each solely as a thing to be passed by, in the order which carries our thoughts home. And, I apprehend, memory may here travel back from the later to the former, because for our interest the earliest is the end. Thus, when we steam against the sea from our native shore, if we thought of ourselves we should go forward against the waves. But as our hearts are left behind, we follow each wave that sweeps backwards and seems to lengthen the interval. And, in remembering objects passed by upon the waters, I think, contrary to our main habit, our memory might take the road that leads to our desire. But nature here, not less than elsewhere, soon effects a change in the course of our thought.

V.—CRITICAL NOTICES.

Elements of Physiological Psychology. A Treatise of the Activities and Nature of the Mind from the Physical and Experimental Point of View. By GEORGE T. LADD, Professor of Philosophy in Yale University. London : Longmans, Green & Co. (New York : Charles Scribner's Sons), 1887. Pp. v., 696.

Such a book as Prof. Ladd here sends over from America has been wanted in English ever since Prof. Wundt showed its possibility in 1874. The *Physiologische Psychologie* has been translated into French and Russian, and an English version, more especially of the third edition now in press, would be very welcome. An original book has however the more vitality, and there was great need of a work simpler and less technical than Prof. Wundt's. Prof. Ladd deserves warm thanks for undertaking the preparation of such a work. His careful and able book will prove most useful to all who take interest in the results and prospects of physiological psychology.

Prof. Ladd, after a brief introduction (pp. 14), treats his subject in three parts named respectively "The Nervous Mechanism" (pp. 219), "Correlations of the Nervous Mechanism and the Mind" (pp. 343) and "The Nature of the Mind" (pp. 103). The second of these sections is without doubt the most important. It is possible to question the necessity or even advantage of an introduction on the nervous system. There is need of an English work on the physiology of the nervous centres and sense-organs, as thorough as that contained in Hermann's *Handbuch der Physiologie*; but Prof. Ladd cannot of course attempt this in the limits to which he is confined. It is equally impossible to start from the beginning and teach in the first section all the science needed to understand the rest: the student must be supposed to have some acquaintance with physics and biology, knowledge best gained in the laboratory and dissecting-room. Neither an exhaustive treatise on the nervous system nor a science primer is in place. Introductions such as Prof. Wundt and Prof. Ladd give are useful only in proportion to the extent to which they clear the ground for, and lead up to, the facts and theories with which the work is concerned. From this point of view Prof. Ladd's treatment does not seem altogether successful. For example, the rate of transmission of the impulse along the nerve is discussed at length: this is only of interest to the psychologist, however, in so far as it enables us to analyse reaction-times and determine the time taken up by mental processes, and no such application is made. The anatomy of the semicircular canals is only important to the student of mind in so far as these organs are brought into con-

nexion with consciousness ; but no mention is made of sensations of equilibrium, motion and dizziness with which they are supposed to be concerned. Prof. Ladd is known to us as the translator of Lotze's *Dictate*, and Lotze was one of the first, in Wagner's *Handwörterbuch der Physiologie*, 1843, to take a stand against the then prevalent vitalism and attempt to subject living tissues to the laws of matter in motion. This mechanical theory of life is now generally accepted, and it is no wonder that Prof. Ladd emphasises it both in the name of the section, "The Nervous Mechanism," and in his treatment of the subject. Thus he says (p. 216) :

"The aim of physical research with regard to any given system of this kind is, therefore, not accomplished until all the movements of its different parts are explained in the light of a consistent mechanical theory. This general principle of all physical science neither needs nor permits a special exception in the case of the human nerves, organs of sense and brain."^f

Therefore we cannot be other than surprised when Prof. Ladd afterwards advocates a theory of interaction and causal relations between mind and body in sheer contradiction to a mechanical theory of living tissues, even saying (p. 665) :

"For aught we know, it is of the nature of atoms, when they are brought into relations so extraordinary as those which prevail in the nervous system, to behave with reference to each other in a way that is wholly irreducible to any simple formula like that of the conservation and correlation of energy".

Prof. Ladd's account of the nervous system, taken as a separate treatise, is clear and accurate, perhaps the best in our language. It is, however, possible that the 219 pages and 82 illustrations would have been of more service if they had been given to the real subject of the work.

This subject, physiological psychology or psychophysics, is treated in the second part, taking up slightly less than half the book. The first two chapters are on "The Localisation of Cerebral Function," and deal with matters at present in sad confusion. Prof. Ladd's review seems to be on the whole careful and judicious. He perhaps lays too much stress on the results of Prof. Exner, whose manner of illustration, beautiful as it is, is somewhat misleading : the surface of the brain is divided into little areas, which are printed darker as the percentage of cases increases in which the area was diseased in connexion with a particular motor or sensory disturbance ; thus, if there were only one case the area would, possibly by mere chance, be quite white or quite black, and seem more positive than the grey obtained from a large number of cases. Prof. Horsley's interesting surgical operations at the Queen's Square Hospital are, perhaps, too recent for mention. Aphasia is treated somewhat briefly considering its importance and the valuable monographs we have on the subject by Kussmaul and others. Prof. Ladd does not seem justified in stating, and in italics (p. 284) :

"*Sensibility seems, then, to be the predominating function of the right hemisphere, as motion is of the left.*"

The next two chapters treat of "The Quality of Sensations," and here real progress has been made during the past forty years, both in experimental research and in psychological analysis. Prof. Ladd says (p. 306) :

"As respects developed experience the *simple* sensation is a necessary fiction of psychophysical science. Consciousness is scarcely more able directly to analyse a presentation of sense into those factors out of which it originated than it is to analyse a drop of water into its component oxygen and hydrogen gases."

But he thinks "scientific analysis" can do what "introspection" cannot. In so far as analysis of the sense-stimulus is meant by scientific analysis we are on ground foreign to psychology. Physical and physiological research may lead us to look for complexity in consciousness where we had not expected it, as in the sound of the human voice, but the fact that the physical stimulus associated with the sensation of white light is more complex than that associated with blue does not make the sensation any the less simple. How far the introspective analysis of consciousness will be able to advance cannot be foretold; we may however be sure that we shall never reach simple and isolated elements out of which consciousness can be constructed. Such a point of view has been the source of much evil to psychology. It either leads, as in Hume, to the practical denial of the unity of consciousness, or, as in Prof. Ladd's book, to the assumption of a mind with a mysterious power of creating unity of consciousness out of sensation-atoms. It is as though Prof. Ladd should analyse abc into $a + b + c$, and then say that as $a + b + c$ does not equal $a \times b \times c$, it must be multiplied by x ; or as though he should divide the human body into head, limbs, &c., and say that as these parts when taken separately do not make up the body, they cannot when taken together. It seems necessary to lay stress on this fallacy, as it unfortunately plays a large part in the book.

Prof. Ladd's account of the psychophysical researches into the quality of sensations is, in general, concise and accurate. He begins with smell and taste, thus reversing the usual order of treatment. I cannot agree with Prof. Ladd in thinking that, while it is impossible to classify smells, it is easy to classify tastes. No combination of sweet, sour, bitter and salt will give vanilla or chocolate, nor can the taste of lemon and sugar be analysed into sour + sweet. Sensations of sound are well, but—considering the importance of the researches of Helmholtz, Stumpf and others—somewhat briefly treated. Mr. Gurney's valuable book on *The Power of Sound* is not referred to. Important researches from the laboratory at Leipsic are probably too recent for mention: indeed some of these are only now in press, although the experiments were made so long as three years ago.

(It may be worth mentioning in connexion with sensations of sound that there has just been made for the Leipsic laboratory a tuning-fork vibrating fourteen times per second and giving a distinct note.) Prof. Ladd gives a good account of sensations of light and colour, but is at times rather brief and does not attempt to decide between rival theories. Lord Rayleigh is not mentioned under either light or sound. There is much need of further research into sensations of light and colour, especially concerning contrast and fusion of sensations. Due prominence is given to sensations of the skin, including the most recent researches of Blix, Goldscheider and Donaldson on the temperature-sense. This too is a field where careful experiment will yield farther important results. Prof. Ladd seems in these chapters to confuse the doctrine of the Specific Energy of the Nerves with the fact that nerves connect special sense-organs and muscles with special brain centres.

Chapter v., on "The Quantity of Sensations," contains an excellent discussion of the elaborate researches of Weber, Fechner and others into the relation between the strength of the stimulus and that of the corresponding sensation. I agree with Prof. Ladd in thinking that the "least observable difference" is not a unit with which sensation can be measured. It might also be added that the value is obtained at the "threshold of sensation," just where Weber's generalisation does not hold. The immense amount of research and theorising devoted to "the psychophysical law" has not been wasted, as it has led to more accurate methods of experiment and clearer thinking; but the positive results seem scant, and may lead us to wonder whether the labour might not have been more wisely distributed.

Chapters vi. and vii., on "The Presentations of Sense," give an excellent account of sensation-circles, binocular vision and many other subjects of importance to the psychologist. I am, however, compelled to criticise Prof. Ladd's account of the formation of perceptions. From the translator of Lotze we might have expected a clearer discussion of local signs and the psychological origin of our idea of space. Prof. Ladd says (p. 416):

"It is unnecessary to illustrate in further detail *the process by which the mind with its native synthetic activity and with the help of qualitatively different sensations constructs its field of touch*" (Italics mine).

But this is just what has been neither explained nor illustrated. Prof. Ladd lays great weight on a distinction between "localisation" and "eccentric projection," seeming almost to think that we have by intuition a knowledge of the shape of our own body, and go on thence to construct other things. We may, however, wonder what "eccentric projection" is when we read (p. 387):

"The law of eccentric projection is generally stated thus: Objects are perceived in space as situated in a right line off the ends of the nerve-fibres which they irritate".

In places there is confusion amounting almost to contradiction. For example, Prof. Ladd says, and correctly (p. 455) :

" Objects of sense [*i.e.*, perceptions] are in no case exact copies of ready-made things which exist *extra-mentally* just as they are afterwards perceived, and which get themselves copied off in the mind by making so-called impressions upon it ; they are mental constructions".

But it had previously been said (p. 391) :

" It is position and extension in space which constitute the very peculiarity of the objects as *no longer* mere sensations or affections of the mind. As sensations they are neither *out of* ourselves nor possessed of the qualities indicated by the word *spread-out*. As objects of sense [*i.e.*, perceptions] they are both *out* and '*spread-out*'."

Chapter viii. gives a tolerably complete summary of experiments which have been made on the "Time-relations of Mental Phenomena". Prof. Ladd does not often venture to criticise, and in several cases praises work of doubtful value. It is said (p. 497), and very truly, "Experimental research does not explain the origin or nature of our idea of time and its relations". Research in the field of psychometry has, however, been tolerably successful, and has yielded results not without importance. It is interesting simply to know that the time it takes to perceive, to will, to remember, &c., can be determined, and that this time is constant for the same individual and under the same circumstances, but is a function of race, age, occupation, &c. The fact that changes in the brain and changes in consciousness correspond in time throws light on the relations between the two. Further, psychometric research helps us in analysing perceptions and in studying attention, volition, &c.

Chapter ix., on "Feelings and Motions" [Movement? Emotion?], was evidently written with extensive knowledge of the German and English literature concerned with the subject. It is, however, a pity that use could not have been made of Mr. Ward's important article in the *Encyclopaedia Britannica*, with its clear definitions and treatment of feeling, attention, &c. Prof. Ladd says (p. 344) :

" Sensations of motion, of innervation and weariness of the muscles, the so-called 'common sensations' (or sensations of the *sensus communis*), the sensations of pain or pleasure and those delicate shadings of sensations, as it were, which constitute the 'local colouring' of all the feelings to which we assign a definite place in the fields of sight and touch, are all closely allied to sensations of pressure and temperature".

Prof. Ladd also speaks of "feeling with its colour-tone of pain or pleasure" and of an "involuntary act of will". Yet, in spite of considerable confusion, the chapter is not wanting in interest and value. The "feeling of effort" is treated in this chapter apparently owing to an ambiguous use of the word "feeling". In the battle now waging over the sense of effort, Prof. Ladd sides

with Prof. James, holding it to be a complex of afferent sensations.

The next chapter treats of the "Physical Basis of the Higher Faculties". At the beginning an excellent account is given of how physiological psychology should unite physical and mental science. The chapter is largely occupied with memory, but no mention is made of the experiments of Ebbinghaus and others. Prof. Ladd holds that the inertia of the nervous system furnishes, "in part, the necessary conditions of conscious acts of memory," but thinks judgment, reasoning, &c., can have no physical concomitants. Thus he says (p. 545) :

"From its very nature that marvellous verifying *actus* of mind in which it recognises itself as the subject of its own states, and also recognises the states as its own, can have no analogous or corresponding material substratum".

The eleventh and last chapter of this section is on "Certain Statical Relations of the Body and Mental Phenomena," and treats of age, sex and temperament. It is not easy to draw a sharp line between physiological psychology, on the one hand, and anthropology, sociology and philology, what the Germans call "Völkerpsychologie," on the other. Mr. Galton's name is not mentioned in the book, nor does it touch work such as that associated with the names of Steinthal and Lazarus. It must have been difficult to prepare a book on physiological psychology without making mention (beyond a brief account of aphasia from the physiological side) of language. Abnormal states of consciousness are expressly excluded. This was perhaps necessary, owing to the limits of the work; but it is none the less a pity, as disturbances of consciousness are of the utmost interest to the psychologist, both in themselves and owing to the light they throw on the normal workings of the mind. Prof. Ladd classes sleep and dreaming, in which a third of healthy life is passed, under abnormal states of consciousness.

In concluding this section, Prof. Ladd gives "five great groups of correlations between body and mind". Proposition (4) must, however, be given a somewhat forced interpretation, in order to bring it into harmony with views expressed elsewhere in the book. The propositions are :

"(1) The quality and intensity of the sense-element in our experience is correlated with the condition of the nervous system as acted on by its appropriate stimuli. (2) The combination of our conscious experiences is correlated with the combination of the impressions made upon the nervous system. (3) Those phenomena of consciousness, which we designate as 'memory' and 'recollection,' are correlated with the molecular constitution and tendencies of the elements of the nervous system. (4) The course of thought, and all the higher forms of self-conscious experience, are correlated with the condition of the nervous centres. (5) The statical condition of the body and the general tone or colouring of conscious experience are correlated."

This review has reached such length that little more than mention can be made of the third section of the book. I do not altogether regret this, as I should be compelled chiefly to criticise, and, in matters of speculation, criticism is not usually profitable. The subjects of the four chapters are: "The Faculties of the Mind, and its Unity," "The Development of the Mind," "Real Connexion of Brain and Mind" and "The Mind as Real Being". Prof. Ladd argues that mind is "a real unit being," standing in causal relations with the brain. It is not easy to bring such a view into accord with the physical theory of the conservation of energy. Prof. Ladd defines energy as "that which moves or tends to move the elementary atoms, or their aggregations, into molecules and masses"! A superficial reading might find Prof. Ladd's views identical with Lotze's. Lotze, however, saves himself from a materialistic dualism through his monadology. Prof. Ladd concludes his book by leaving the full consideration of "the first and last things of the Mind—its origin and destiny, its mortality or corruptibility," "to Rational Psychology, to Ethics, to Metaphysics and to Theology".

The preparation of a book on physiological psychology, at a time when both physiology and psychology are confused and irregularly advancing, is a task of the utmost difficulty. Such a book cannot but contain matters open to criticism, and these it is the duty of the reviewer to notice. In the present case, however, it is equally a duty to give the sincere praise which the book deserves. We are not only under great obligation to Prof. Ladd for his care and labour, but owe hearty recognition to the mastery and ability which have enabled him to prepare a work of real value and importance.

J. McK. CATTELL.

The Principles of Morals (Introductory Chapters). By JOHN MATTHIAS WILSON, B.D., late President of Corpus Christi College and Whyte's Professor of Moral Philosophy in the University of Oxford, and THOMAS FOWLER, D.D., President of Corpus Christi College and Wykeham Professor of Logic in the University of Oxford, &c. Oxford : Clarendon Press, 1886. Pp. vii, 133.

The Principles of Morals. Part II. (Being the Body of the Work). By THOMAS FOWLER, D.D., &c. Oxford : Clarendon Press, 1887. Pp. xii, 370.

The first and smaller of these two volumes represents the portion of the work which was completed before the death of Prof. Wilson. For the second Prof. Fowler is alone responsible, though considerable portions of it (which are exactly indicated) are "either based on written or oral communications" received from Prof. Wilson, "or were jointly composed" by the two authors. The first volume is mainly historical, though it begins with chapters

on "The Relation of Morals to other Sciences," and ends with a chapter on "The Method of Morals"; the second is mainly constructive. Though the two volumes are intended to be parts of the same work, the preliminary volume possesses a certain completeness in itself, and it is likely to be found by many students in moral philosophy a useful introduction to the subject. A good sketch of the history of moral philosophy in England had long been a desideratum; and, in spite of the publication of Prof. Sidgwick's admirable *Outlines*, the present vol. i. is likely to be preferred by many beginners in moral philosophy and others who might be repelled by Prof. Sidgwick's closely packed summary and closely reasoned criticism. The great merit of the Oxford Professors' book is that it as far as possible lets the writers tell their own tale. Their opinions are given in extracts from their works. The task of selection is as a rule skilfully performed. Salient passages are quoted, which give the substance of the writers' teaching in the fewest possible sentences. I cannot but think, however, that occasionally the really characteristic feature of a moral system is somewhat missed. It is strange that students of Hutcheson should have found it possible to write even eight octavo pages upon him without noticing the prominence given in his works to the æsthetic aspect of Morality. That the account of Butler should be somewhat unsatisfactory is less surprising; since writers of the most different schools have agreed to persist in the uncritical attempt to construct a harmonious system out of works composed at different dates and representing markedly different philosophical standpoints. Complaint is made that "the various places in which Butler delineates the constitution of human nature are by no means consistent with each other" (i. 52). I am not prepared to say that the charge of inconsistency should have been withdrawn even if attention had been confined to the *Sermons*. As it is, quotation is made indifferently from the *Sermons* (1726) and from the *Dissertation on Virtue* (1736), which was evidently intended (though there is no explicit recantation) to modify the ethical position of the *Sermons* in accordance with the altered moral standpoint presupposed in the *Analogy*, to which it was appended. To attempt to construct a harmonious ethical system out of the two treatises is almost as desperate an undertaking as to attempt to construct a description of the Platonic State partly out of the *Republic* and partly out of the *Laws*. Again, it is said: "In the speculations of Butler we find no mention of any external standard or criterion" (i. 56). I do not deny that Butler fails adequately to explain the relation between his internal standard Conscience and the external standard Utility; but such an unqualified statement as the above is hardly justified in reference to a writer who tells us that "leaving out the particular nature of creatures and the particular circumstances in which they are placed, benevolence seems in the strictest sense to include in it all that is good and worthy, all that

is good which we have any distinct particular notion of" (*Sermon xii.*). Accounts of Butler's moral system are too frequently based upon the first three *Sermons* and the *Dissertation*. The over-disparagement of Butler is the more remarkable inasmuch as there is no modern writer whose influence is so plainly traceable throughout Prof. Fowler's own work. His treatment of the "resentful feelings," for instance, is thoroughly Butlerian; and there is no better instance of what may be called the latent Utilitarianism of Butler than his sermons on Resentment. So again, Prof. Fowler's distinction between the semi-social and directly social feelings, and his whole view of the nature of moral obligation as "imposed upon us by . . . the *whole nature of man* . . . capable of reflecting on its own acts, and, as a consequence of that reflection, capable of passing on them a definitive sentence of approval or disapproval" (ii. 260), are thoroughly Butlerian positions. I should hardly exaggerate if I said that the strongest and most valuable parts of Prof. Fowler's exposition read to me like a restatement of Butler in more modern language and in accordance with the changes necessitated by the now generally accepted views of the gradual development of the moral nature of man. At times also Butler seems to be responsible for some of the more questionable positions of Prof. Fowler's ethics and psychology—*e.g.*, his somewhat inadequate appreciation of the beauty of forgiveness and its moral effect on the offender, and again his denial of the existence of "disinterested malevolence" (ii. 112).

When they come to the constructive part of the work, most readers will probably be struck by the somewhat disproportionate prominence given to mere psychological analysis—the mere classification of "feelings" and description of their growth and development in the race and in the individual. In the first two hundred pages of vol. ii. a series of descriptions and classifications, which has little direct bearing on Ethics, is varied only by somewhat unimportant moral reflections on the use and abuse of the various passions and affections. It need hardly be said that these reflections are throughout characterised by good sense and good feeling; but they are sometimes on the borderland of the obvious; and from a philosophical point of view it may be objected that, since Prof. Fowler's view of the ethical *τέλος* is not established till the latter part of the volume, the reader does not know from what point of view or by relation to what standard of criticism the moral value of the various feelings is being estimated.

No doubt, Prof. Fowler's justification of the prominence given to this descriptive and historical Psychology would be that it constitutes one long and unanswerable indictment against all Intuitionist or *a priori* views of Ethics. As a matter of fact, however, no Intuitionist of the present day will dispute the position that the moral nature of man has been gradually developed. Development and evolution are as fully recognised in the ethical works of Dr. Martineau and the late Prof. T. H. Green as in those of

Mr. Herbert Spencer and Mr. Leslie Stephen. It is open to Prof. Fowler to contend that the theories of such writers are irreconcilable with the admitted facts of evolution. This, however, he never does. Throughout the greater part of the polemical portions of the work the author seems to me—if I may say so without disrespect—to be simply beating the air. Prof. Fowler never really comes to close quarters with any system which is actually held at the present day by moral philosophers of whom it is necessary to take account. All antagonistic theories are disposed of by such curt remarks as this which we may go back to cite from vol. i. (p. 12):—“Any moral system otherwise constructed”—than on a purely inductive basis—“can have no solid foundation of fact, and necessarily partakes of a metaphysical and transcendental, that is, as we conceive, of a purely fanciful character”. Here the two professors appear hardly to recognise that those who conceive of Moral Philosophy as a branch of Metaphysics would admit as fully as they do that “the means at our disposal for the study of moral science consist in a knowledge of the *results* of those sciences which throw light (1) on the nature of the individual organism, that is, on the man himself; ¹ (2) on the medium, whether material or social, in which he exists” (p. 11). But these would contend that when we have established by induction the nature of man as he is, there remains the further question, ‘What ought he to be?’ and that no answer to this question can possibly be given without involving an *a priori* judgment. Induction may prove what is; it cannot prove what ought to be. Between ‘is’ and ‘ought to be’ there is a gulf fixed which no possible accumulation of experience can possibly bridge over. The ‘content’ of the Moral Law may be established by induction, but not its ‘form’. I may find out by Induction what courses of action fall within my conception of ‘rightness,’ but how can the idea of ‘rightness’ itself be found in experience? If we take as our ethical criterion the ‘greatest-happiness principle,’ we may find out by induction what courses of action will tend to produce happiness, but it is impossible to proceed to the judgment: ‘Actions which conduce to happiness ought to be done’ without the assumption ‘Happiness *ought* to be promoted’. When Prof. Fowler does at length come to face the question of the nature of Moral Obligation, an attempt is made to get rid of this imperious and ever-intruding ‘ought’:—“The obligation to do what is right . . . is imposed upon us by our *moral nature*, by which I mean the whole nature of man, sympathetic as well as self-regarding, rational as well as emotional, capable of reflecting on its own acts, and, as a consequence of that reflection, capable of passing definitive sentence of approval or disapproval” (ii. 260). In a note upon the

¹ The metaphysical moralist would of course object to the identification of the “man himself” with his “organism”. Perhaps Prof. Fowler himself would hardly, on reflection, defend the concentrated materialism involved in this expression.

same page we read : " It will be plain, from what I have said in this and the preceding chapters, that I do not agree with Prof. Sidgwick (*Methods of Ethics*, bk. i., c. 3) in regarding the idea connoted by these terms (*i.e.*, 'ought' and 'duty') as ultimate and unanalysable". I cannot but feel that in this last statement Prof. Fowler is making a somewhat large demand upon the sagacity of his readers. To my own mind it would have been by no means plain that he had even intended to analyse the 'ought' into something else. The passage in the text might well have been written by Dr. Martineau ; it might have been subscribed to (though he would have expressed himself differently) by Prof. T. H. Green. For the 'analysis' of the 'ought' is merely apparent ; it has been made to disappear only by the use of words which imply it. To say that an " obligation is imposed upon us " is only another way of saying 'we are obliged'. And what is to " pass a sentence of approval " upon an action but to say that it *ought* to be done ?

I am aware, of course, that Prof. Fowler would not regard these objections as unanswerable. He would urge, for instance, that, in his view, moral obligation flows from the " particular nature " of man, while the Idealist regards it as flowing from the " eternal and necessary relations of things ". Fully to examine the validity of this distinction would occupy more space than I have at my disposal. I can only point out the consequences of a logical acceptance of Prof. Fowler's position (p. 261) that " the majesty of the moral law, if that be regarded as the source of moral obligation, implies, on our part, a recognition of that law, a reverence for it, and a willingness to conform our actions to its requirements ". Does Prof. Fowler mean to say that the obligation or " majesty " of the moral law disappears when we are unwilling to recognise it ? Or if the obligation is made to consist wholly in the penalties annexed to its non-performance, does he not fall at once into that pure Hedonism against which, alike in its theological and its untheological forms, he elsewhere vigorously protests ?

For the rest, I gladly acknowledge that Prof. Fowler has made some real contributions towards a reconciliation of conflicting theories—towards what I may call the moralisation of the aggressive Utilitarianism of Bentham and his disciples. Except where he catches a sight of the red rag of " Metaphysics," or the *a priori*, Prof. Fowler is willing enough to incorporate "intuitive" elements into his teaching, though when he does so he shows an almost amusing eagerness to make his apologies to those whom he regards as his philosophical forefathers. "The sympathetic affections" are declared to be " coeval with the human race, or, at all events, with the time when man first deserved to be called by his present name " (ii. 75). On the question whether the altruistic affections were gradually evolved out of the egoistic, Prof. Fowler suspends his judgment, and enters a protest against what he calls " specu-

lative psychology". Nothing is more commendable in a philosopher than the courage, in the face of the opposing dogmatisms of materialistic and metaphysical theories of the universe, to admit that there are some things which we do not know, though in this instance the courage displayed in the text is tempered by a somewhat unnecessary apology to Mr. Herbert Spencer in a note. The only point in which Prof. Fowler's treatment of this subject seems to me to be less satisfactory than could be wished, is that there runs through his treatment a tacit assumption that all impulses to action, whether in man or beast, must be either egoistic, altruistic or a mixture of the two. No difference seems to be recognised between an animal instinct and a self-conscious desire. I may add that in the earlier portion of the work the word 'desire' seems to be almost studiously avoided. Instincts, emotions, desires, and perhaps other psychical activities, are all described as "feelings". But, perhaps, the distinction which I desiderate would be brushed aside by Prof. Fowler as "metaphysical". When we come to the fundamental question of the nature of "good" and its relation to pleasure, Prof. Fowler declares for differences of quality or kind, as distinct from mere differences of quantity. At times, indeed, he does not seem to exhibit very clearly the distinction between a quantitative and a qualitative difference. Thus, on p. 164, higher good seems to be almost identified with greater pleasure in the future; and on p. 266 the superiority of the higher pleasures seems to be made to depend mainly or entirely upon its greater permanence. There can be no doubt, however, on which side of the controversy he really means to declare himself. Indeed, it is not altogether clear that, in Prof. Fowler's conception, the term "good" is identified with "pleasure," even of the highest possible order. "The good of man . . . as a whole," he tells us, "may be conceived of as the development of the various parts of his nature in harmony with one another, and with the social and material medium in which he exists" (p. 264). Elsewhere we are told that the good of any part of an organic being is "the satisfaction or development of that part, and the good of the whole the development of its entire nature, or the attainment of that end or those ends for which it is naturally fitted" (p. 263). In such definitions not merely the word but the idea of pleasure seems to be altogether eliminated; except, indeed, in so far as it may be covered by the use of the term "satisfaction"; but if by "satisfaction" is meant "pleasure," it is difficult to see how a "part" of an organic being can be said to feel pleasure. Nor is it possible, without a good many assumptions (Aristotelian or Spencerian) which Prof. Fowler, at all events, makes no attempt to justify, to make the "satisfaction," whether of the part or the whole nature, identical with its "development". Want of space prevents me from pointing out the amount of non-sensationalistic metaphysics which are involved in the identifica-

tion of the good of an organic being with the "end" for which it is naturally fitted. Does the "end" mean the purpose which it is actually capable, as ascertained by experience, of serving? If so, it is difficult to see how any human being can fail to attain his "end," and hence the conception of the "end" of man becomes incapable of serving as a guide to conduct. Does it mean the end which a person or thing *ought* to attain? If so, how can the end be discovered except by the aid of some idea of good which cannot be found in sensible experience? If the end be ascertainable by experience, what factor in experience is it—which among the numerous results of an action is it—which shows whether or not the end of the creature's being has been attained by it? If the resultant pleasure, we go back to the Hedonism out of which Prof. Fowler's half-unconscious Aristotelianism is struggling to emancipate him. If he reply 'pleasure measured by a non-quantitative standard,' what is that standard, and by what faculty is it recognised? This is where Prof. Fowler's treatment of the ethical $\tau\acute{e}\lambda\sigma$ —admirable as it is from a practical point of view—leaves us speculatively unsatisfied.

Another point on which Prof. Fowler seems to me to approximate to the position of moralists whom he would perhaps describe as Intuitionists, is in the prominence given to Reason in Morality. It is there that he very emphatically rejects the claim of Reason to supply "the sole spring of action" (p. 279); but he clearly makes the essence—or at least an essential element—of Conscience to be a "judgment" (p. 173). "Man is constituted a moral being by his possession of a nature capable of reflecting on its own acts and, as a consequence of that reflection, capable of passing on them a definitive *sentence* of approval or disapproval" (p. 261). True, he says, that "our ends are always suggested by some passion, appetite, desire or affection, in short, by some emotion". But if it is the "reflection," i.e., the Reason, that stamps them as moral, if it is by the Reason that "the co-ordination of our several desires and feelings, sympathetic, self-regarding, semi-social and resentful, is effected" (p. 283), then Reason is pronounced to be essentially the Moral Faculty. It is true, of course, that before that which the Moral Faculty decrees to be done can be actually performed, there must be a "desire" of some kind—or, as Prof. Fowler calls it, a "moral feeling" in the mind of the agent; but that is fully admitted in substance (though Kant chose to call it an 'interest') by the most thorough-going Rationalists. Whence Reason gets its conception of the standard by which our desires are to be "correlated," of the "ends" by reference to which actions become subjects of "approbation" or "disapprobation," is (as I have tried to show) a question not to be satisfactorily answered without the admission of that "ultimate and analysable idea of right" against which Prof. Fowler so strenuously protests.

I feel that this review has been at once very inadequate and much too polemical. I have been critical rather than appreciative

because (from my own point of view) the importance of the book lies in admissions of whose logical consequence the author seems (if I may so, with all respect) to be not sufficiently aware; and those consequences can only be elicited by a criticism which must at times, I fear, have appeared somewhat more hostile than is usually desirable in a notice of this character. I trust, however, that I have sufficiently indicated that for those who are satisfied with the intellectual positions of "Inductive" Utilitarianism—for those who believe that it is possible to think without consciously or unconsciously falling into "Metaphysics"—the book should be a very welcome contribution to our philosophical literature. It would be impossible for Utilitarianism to be presented in a more amiable, a more conservative—I may add, a more edifying—dress than it wears in Prof. Fowler's pages. What seem to me the defects of the book are no doubt largely accounted for by the conditions under which the volumes have been published—conditions for which Prof. Fowler is in no way responsible. The work was projected, and no doubt largely written, before 1875, that is to say, before the great advance in ethical speculation in this country, to which Prof. Sidgwick,¹ Mr. Leslie Stephen, Prof. John Grote, Prof. T. H. Green and Dr. Martineau have been (from different points of view) the principal contributors. In very many points, advances upon the older Utilitarian doctrine, which have evidently been made quite independently, have been substantially anticipated by some of the writers just mentioned; while the critical or controversial parts of the work often seem to be written rather from the philosophical point of view of 1875 than from that of 1887. It is to be regretted that the book did not appear at a time when it would have possessed an importance as a contribution to the progress of Ethical Science which now it can hardly claim. But it is impossible not to welcome the publication of a work in which some of the most important results of this advance are arrived at by an independent method, and presented in a clear, manly and attractive style. It is probable that Prof. Fowler's interest in Moral Philosophy lies less in its speculative controversies than in the practical principles which will be generally admitted by instructed and thoughtful persons, however much they may be lost sight of in popular Ethics. Of such principles Prof. Fowler is an admirable exponent: his book supplies a good illustration of the practical value of a scientific treatment of Morality and of the large extent to which that value is independent of speculative differences.

H. RASHDALL.

¹ *The Methods of Ethics* was published in 1874, but whether or not most of the joint-work of Profs. Fowler and Wilson was written before that time, it is at least fair to say that the position of Prof. Sidgwick is not dealt with in the way which is demanded by the epoch-making character of his book.

The Introduction to Hegel's Philosophy of Fine Art. Translated from the German, with Notes and Prefatory Essay, by BERNARD BOSANQUET, M.A., Late Fellow and Tutor of University College, Oxford. London: Kegan Paul, Trench & Co., 1886. Pp. xxxiii., 175.

Though only a small volume, this is one of the most serviceable contributions that have been made to the interpretation of Hegel in this country. The translation itself is executed, so far as we can judge, with scrupulous care and accuracy; is more readable to those not acquainted with the original than translations usually are; and, it may be added, is in many places more smooth and rhythmical than the original—though that, perhaps, is not much praise. What gives a special value to Mr. Bosanquet's volume is his endeavour “to interpret philosophical expressions instead of merely furnishing their technical equivalents”. A translator ought primarily to consider those who know nothing of the language translated, but it is a great mistake to assume that his labour is only for them. Many a student of philosophy may know a good deal of German, and may yet be deterred from at once attacking such an author as Hegel in the original, with all the added terrors of black-letter type, bad paper, no index and a very meagre and mysterious table of contents. Even those who have read much German and much Hegel will find help and suggestion in Mr. Bosanquet's manner of rendering and in his very brief notes of explanation. We may take for illustration a passage in which the difficult term ‘*Bestimmung*’ occurs. It is as follows (*Aesth.*, vol. i., p. 26):—

“Was setzt Meyer nun aber, ergeht die weitere Frage, jenem Kunstprinzip Hirt's entgegen, was zieht er vor? Er handelt zunächst nur von dem Prinzip in den Kunstwerken der Alten, das jedoch die Bestimmung des Schönen überhaupt enthalten muss. Bei dieser Gelegenheit kommt er auf Mengs und auf Winckelmann's Bestimmung des Ideals zu sprechen, und äussert sich dahin, dass er diess Schönheitsgesetz weder verwerfen noch ganz annehmen wolle, dagegen kein Bedenken trage, sich der Meinung eines erleuchteten Kunstrichter's (Göthe's) anzuschliessen, da sie bestimend sei, und näher das Rätsel zu lösen scheine.”

We place the translations of this passage by Mr. Bosanquet and by Mr. Hastie (Edin., 1886) side by side:—

“Then follows the further question—what Meyer opposes to Hirt's artistic principle, *i.e.*, what he himself prefers. He is treating, in the first place, exclusively of the principle shown in the artistic works of the ancients, which principle, however, must include the essential attribute [Footnote ‘*Bestimmung*’] of beauty. In dealing with this subject, he is led to speak of Mengs [*sic!*] and Winckelmann's principle

“But the further question arises, as to what Meyer himself proposes and prefers, in contrast to Hirt's principle of Art. In the main, he treats only of the principle of Art as presented in the works of the ancients, but he treats them as exhibiting the nature of the Beautiful in general. He proceeds to speak of Mengs' and Winckelmann's definition of the Ideal, and expresses himself to the effect that he will

[Footnote '*Bestimmung*'] of the Ideal, and pronounces himself to the effect that he desires neither to reject nor wholly to accept this law of beauty, but, on the other hand, has no hesitation in attaching himself to the opinion of an enlightened judge of art (Goethe), as it is definite [Footnote "*Bestimmen*"], and seems to solve the enigma more precisely." (Bosanquet, pp. 35, 36.)

neither reject nor entirely accept their law of beauty. On the other hand, he says he has no hesitation in adopting the view of a certain enlightened judge of art, as it is definitive and appears to solve the problem more correctly. He refers to Goethe." (Hastie, pp. 29, 30.)

In this passage Hegel, with an awkwardness we have to be prepared for in him, and which was perhaps excusable in Lectures, uses the genitives '*des Schönen*',¹ and '*des Ideals*', in different senses after the first and second '*Bestimmung*' respectively. Thus Mr. Hastie's rendering "definition of the Ideal" would convey a wrong notion to the English reader. Hegel evidently means "determination of the Beautiful *as* the Ideal," i.e., 'Ideal' is the *paris definitiensi*, not the *definiendum*. Apart from this one point, however, Mr. Bosanquet's version seems the more successful of the two (though we must not be understood as ignoring the value to the student of Mr. Hastie's little book with its interesting preface).

Hegel's oft recurring term '*formell*' is not simply represented in Mr. Bosanquet's work by the English equivalent 'formal,' which in many of the contexts would be meaningless or baffling. Thus on p. 3 we have :

"Indeed, if we look at it *formally*—i.e., only considering in what way it exists, not what there is in it—even a silly fancy, such as may pass through a man's head, is *higher* than any product of nature, &c."

Here the parenthetic clause is an insertion of the translator's, and should perhaps have been expressly marked as such. In this place Mr. Hastie renders "looked at relatively," which conveys a meaning, but not exactly all Hegel's meaning. On pp. 58, 80, 91, 125, of Mr. Bosanquet's translation will be found other instances in which '*formell*' is aptly explained by footnotes. The last of these is worth quoting, as it contains a good brief statement of the ambiguity in the term 'Freedom,' which has puzzled many readers of Hegel :

"*Formal* freedom is detachment from everything, or the (apparent) capacity of alternatives; it is opposed to *real* freedom, which is identification of oneself with something that is capable of satisfying one".

On the conception of freedom there is also a good statement in the Prefatory Essay, pp. xxvi., xxvii.

It should be added that Mr. Bosanquet does not profess to understand everything, nor scruples to acknowledge himself puzzled when he finds a difficulty. It has seemed worth while to dwell on these points, because translations of philosophical

¹ Mr. Bosanquet's rendering of this has a slight ambiguity. It must not be understood as "the essential attribute, beauty".

books are often executed with little clearness of principle and little consideration of the real needs of those who are likely to use them. Some of the notes explain allusions, and give useful references to Scherer's *History of German Literature*. The only pity is that there are not more references of this kind. Once or twice Mr. Bosanquet quotes Browning in illustration. Might he not have referred to Keats's *Ode on a Grecian Urn*, as explaining better than anything else the significance of Hegel's rather bald and undeveloped remark about the relative permanence of the work of art (p. 55 in tr.)? A passage in *Wilhelm Meister*, bk. viii. ch. 5 (near the beginning), would also be in point here. When Hegel refers to Home's *Elements of Criticism* (p. 30 in tr.), the English reader would probably recognise the work more easily under the name of Kames, Henry Home as a Scotch judge taking the title of Lord Kames.

The "Prefatory Essay by the Translator" is entitled "On the true Conception of another World". Any one judging *a priori* might suppose this rather irrelevant to the philosophy of art. A reference to Hegel himself would show its appositeness. It might be regarded as specially a commentary on a passage in the *Æsthetik* (p. 13 in the tr.), as well as on the words from the *Logik* which are quoted as a motto. The writer proposes in this essay "to explain by prominent examples the conception of a spiritual world which is present and actual" (p. xiv.). It might serve as a help to the right understanding of Plato as well as of Hegel.

"The 'things not seen' of Plato or of Hegel are not a double or a projection of the existing world. Plato, indeed, wavered between the two conceptions in a way that should have warned his interpreters of the divergence in his track of thought. But in Hegel, at least, there is no ambiguity. The world of spirits with him is no world of ghosts" (p. xv.).

On p. xx. are some striking remarks about "ideal unity". "An army, *quâ* army, is not a mere fact of sense; for not only does it need mind to perceive it—a heap of sand does that—but it also needs mind to *make* it." The Hegelian conceptions, specially chosen for explanation in what follows, are the "Infinite" (which has been so previously misrepresented in popular opinions about Hegel), Freedom and Immanent Deity. The 'Extreme Right' among Hegel's professed followers would probably not find the exposition on the last point quite satisfactory to themselves.

The Introduction to the *Æsthetik* is very valuable as, in Mr. Bosanquet's phrase, "almost a microcosm of Hegel's entire system". But it is to be hoped that we shall not have to wait very long before the whole of the *Æsthetik*, or (what might be better) many of the most striking and significant passages are translated into English.¹ There are pieces of brilliant criticism,

¹ There is a translation by Mr. Bryant of the Second and most interesting Part of the *Æsthetik*, that which deals with the three types of Art, the Symbolic, the Classical and the Romantic. This appeared in the *Journal of Speculative Philosophy* (vols. xi.-xiii.), and has been republished (see

e.g., that on Schiller's *Götter Griechenlands* (ii. 106-108), sayings which rise through all the clumsiness of expression into poetry, and passages full of sarcastic humour, like that on the modern sense of the word "Romantic" (ii. 215-217), which Dr. J. H. Stirling has translated in the Preface to his *Secret of Hegel*—things of literary value, apart from their philosophical significance, which it is a pity should not be accessible to the English reader. A mere collection of the references to Goethe in the *Æsthetik* would be of interest. When will someone give us a good treatment of the relation between Goethe's and Hegel's theories of life and of art? It is a promising subject. Then, again, Hegel is at his very best in his Philosophy of Art (as in his Philosophy of History) in his appreciation of the Hellenic genius. A measure of the suggestiveness of Hegel to the art-critic may be found by anyone who will turn to Mr. Pater's beautiful essay on Winckelmann (in his *Renaissance*). On the whole, an acquaintance with the *Æsthetik* and its influence direct and indirect should do a great deal to dispel many of the prejudices against Hegel as a philosopher. He defines the object of the Philosophy of Art as being "to ascertain what beauty in general is, and how it has displayed itself in actual productions, in works of art, without meaning to give rules for guidance". The objection is easily made that "beauty in general" is a profitless subject of inquiry; but let the objector refer to Hegel's own criticism of Plato's *abstract* metaphysics (pp. 40-42 in tr.), and let him pay due attention to the second clause of the above definition. Hegel's perpetual endeavour is to get rid of abstractions and one-sided views, and to see things in their complexity and concrete reality; and this endeavour is perhaps more obviously successful in the *Æsthetik* than anywhere else. Undoubtedly, the work loses much of its interest for us because its illustrations, so far as they concern literature, are naturally enough taken mainly from German authors—though Shakespeare at least is not neglected. Undoubtedly, too, much has become commonplace owing to Hegel's own influence. Again, new questions of controversy have come up since Hegel's day, and the old feud between Classicist and Romanticist has not the same excitement for us that it had for his contemporaries; nor would it be worth the while of every conscientious student to make himself acquainted, e.g., with the extravagances of Fr. v. Schlegel in order to enjoy Hegel's contemptuous criticism. It must be admitted also that Hegel has his own limitations and prejudices, notably in his want of appreciation for Nature, a defect which goes along with his

MIND vi. 149). But the earlier portions have filtered through a French version, and much of the detail, which is just what is characteristic in Hegel, has been, without warning, omitted, although in the later part, which is taken direct from the German, the translator has been so careful as to put asterisks where he has been too prudish to translate *Flöhe* and some other things which Hegel mentions among the *Gemeinheiten des täglichen Lebens!*

Classical sympathies. One would like to know what he would have thought of Turner's landscapes, or of the poetry of Wordsworth and Shelley : one is rather afraid that he would have dealt out only some surly sarcasms. To most people it will seem a defect that he separates the beautiful in the Fine Arts from the beautiful in Nature, and expressly excludes the latter from his Science of *Æsthetics* ; his defence is that only in the case of the Fine Arts does the beautiful admit of clear and definite treatment. The English critic is most likely to urge the preliminary need of a psychological inquiry into the origin and growth of our feelings about the beautiful ; and such an account would have the best claim to Baumgarten's term "*Æsthetics*". A treatise like Mr. Grant Allen's *Physiological Æsthetics*, based expressly on the system of Mr. Herbert Spencer, might seem quite inconsistent with Hegel's, but they may exist very well side by side ; for the one begins where the other leaves off. The psychologist is dealing with a question of origin (How do we come to feel or judge this or that beautiful?), and is occupied chiefly with the materials which Art has to use ; Hegel is chiefly concerned with the ideas which Art endeavours to express, and thus naturally is most occupied with the *highest* phases of artistic development, where such ideas can be most clearly seen ; whereas the evolutionary psychologist gives most attention to children and savages, or even the lower animals. There is inconsistency only if the latter denies, as I am afraid Mr. Grant Allen would deny, the legitimacy of Hegel's attempt altogether, as apart from the psychological inquiry. Yet, it is curious to see how well the two methods fit in in most cases ; perhaps it implies that, after all, there is a great deal of sound psychology in Hegel. Thus we might compare Hegel's *Æsth.*, pp. 68-71 in tr. (where he shows that the interest of art is distinct (1) from the practical and self-seeking interest of desire, and (2) from the theoretical interest of intellect) with *Physiological Æsthetics*, pp. 33 and 189 ff., whose subject is the same, "*nur mit ein bischen andern Worten*". Again, that Art arises from the need man has to act and express himself is a thesis which will be found in Hegel (pp. 58-60 in tr.) and in *Phys. Æsth.* (pp. 33 and 208). Hegel shows the artistic superiority of Rhine-wine over coffee in *Hermann und Dorothea* (*Æsth.* i., p. 330), and Mr. Grant Allen has an elaborate note on the poetical advantages generally of wine over rum (*Phys. Æsth.*, p. 268). Some people would of course say that this only shows that men may come to the same sensible conclusion whatever their philosophical systems. May it not show a greater affinity than is generally suspected between ways of thinking that are supposed to lie far apart ?

D. G. RITCHIE.

La Matière brute et la Matière vivante. Étude sur l'Origine de la Vie et de la Mort. Par J. DELBOEUF, Professeur à l'Université de Liège. Paris : F. Alcan, 1887. Pp. 184.

The extremely suggestive speculations of this last work of Prof. Delboeuf have their foundation partly in the psychological conclusions of his immediately preceding work, *Le Sommeil et les Rêves* (reviewed by Mr. Sully in MIND No. 45), partly in his psycho-physical theories. His physical and his psychological ideas find their point of union in the general doctrine stated in the first chapter of the present essay. In opposition to the prevailing "philosophy of men of science" that starts with lifeless atoms and regards life and mind as the result of their combination, the author assumes that life is coeval with the universe, and that the lifeless can only be explained from the living. Inorganic matter and its "fatal" actions are a "residue" of "vital," "intelligent," "free" actions. All the matter of the universe was primitively vital; and "intelligence is the true demiurgus"; for it is by the free action of intelligence that the transformation of living into dead matter is retarded.

We know what it is to be alive, but we do not know what it is to be dead. It is death, therefore, not life, that needs explanation. The explanation is to be sought in a study of the processes of nutrition, generation and birth. From the study of nutrition we may perhaps learn what distinguishes living from not-living matter, and how one is transformed into the other. And the problem of death is bound up with the problems of birth and generation; for death implies birth, though birth does not imply death. That which has had a beginning will not necessarily have an end, but that which has an end must have had a beginning.

In his chemico-physiological study of nutrition, which, as he says, in its positive part merely summarises (but in a very luminous and interesting way) the results of science, the author arrives at the general conclusion that living matter is "relatively unstable," dead matter "relatively stable". "Food" is defined as "a substance which, introduced into the organism, divides itself into two parts: one, more unstable, which is assimilated; the other, more stable, of which a part is deposited, for example, in shells, teguments, the skeleton, &c., and of which the other part is eliminated". The "unstable" part is that which retains most "potential energy". The transformation of "stable" matter into "unstable" that takes place during the assimilation of food is necessary because, during the activity of the organism, forces are constantly becoming "fixed," and with this "fixation of force" goes "the stabilisation of matter". Psychologically, what corresponds to "fixed" force or "stabilised" matter is the definitely organised portion of the mental life, the perceptions that have become memories of the past, the acts of will that have become organised into habit. In the nervous system there is a stable portion that has been already utilised and an unstable portion that is still disposable. The tendency is to greater "stabilisation". Nutrition cannot continue for ever to replace the lost potentialities of change. Thus there arrives a time when the

organism no longer retains the capacity of transforming itself. Its "relative stabilisation" has reached the degree known as "death".

The division into a free or "unstable" and a "mechanical" part on which it depends for its specific and individual characters only appears in the higher organisms. And a higher organism is not completely unstable even at the beginning of its life. There is a "mechanism transmitted by generation," which is "the will and intelligence of ancestors". In every individual there is a psychological "nucleus" of instinct or hereditary habit. And, physiologically, the ovum is not indifferent, but has a tendency to grow into a certain specific and individual form. What is made possible by the process of generation is the recovery, for another individual, of a portion of the "instability" that pre-existing individuals must lose. True or sexual generation is itself made possible by the specialisation that is the result of cell-division. Death of the individual, as has been seen, is the consequence of the specialisation of a complex organism, its division into a stable and an unstable part, and of the tendency of the latter to become stable, so that no further change is possible. Generation is now seen to be the correlative of death. For only by the double process of death and generation is the continued existence of specialising organisms possible. In the case of those unspecialised organisms that multiply by "fission" there is "birth," but, as there is no true (that is, sexual) generation, so there is no "death," except from external accidents. These lowest forms of life are "immortal". We cannot apply to them "the integral notion of natural death," for they "leave no corpse". "But also we cannot apply to them the complex notion of individuality, physical or psychical, since this comprises indivisibility and mechanism."

The discussion of individuality in its relation to generation naturally suggests the question, What is permanent in the individual? Is it a certain portion of matter, an atom or a group of atoms, already present in the germ and unchanged through life, or is it merely a certain form? Can we suppose, as physiologists usually do, that all the matter of the organism is "fluent," and that physical and psychical identity is still preserved, or does individual identity require some material substratum however small? The author inclines to the second alternative. He shows that there is no absolute proof that at the end of a certain time (usually fixed at seven years) every particle of matter in the body has been exchanged with another from outside. It is possible that the matter of the "stable" parts is more persistent than physiologists suppose; and the supposition that a certain portion of germinal matter persists from birth to death is incapable of disproof. The whole body, it is suggested, may be regarded as "a single molecule of infinite complication" consisting of atoms collected around itself by the germinal group on which depends the identity of the organism (p. 133). This theory is not fully worked out, but, as far as it goes, it is strikingly similar to the

theory recently elaborated by M. Burnouf in *La Vie et la Pensée* (see MIND xii. 302).

In Prof. Delboeuf's general speculation, however, the conception of a "monad" as the basis of life and thought is not characteristic. What is distinctive of his theory so far as it relates to the ultimate constitution of things, is his substitution of the atoms of Empedocles for the atoms of Democritus (p. 172). "The primordial elements of the universe are endowed with sensibility, intelligence and liberty." The primitive state, in which they wandered at hazard, is that which the poets have called "chaos". It has only a hypothetical existence; for, immediately after their birth, the elements collided with one another, and, affected in their sensibility, applied their intelligence and their liberty to flee disagreeable and to seek out agreeable encounters. Thus they created for themselves sympathies and antipathies, affinities and repugnances, loves and hatreds. They began to enter into unions with one another, sacrificing part of their liberty for the sake of relative peace, and forming "habits," which became the laws of the universe. Every sensation is the accompaniment of a precipitation of the unstable into the stable. "Laws are the residues of acts primitively free." At first the elements were infinite in number, and each was infinitesimally different from all the rest. Insensibly this infinite primitive variety gave place to groups of substances capable of harmonising, and, among the groups formed, differences more and more profound manifested themselves. Organic molecules were formed, and, in special agglomerations of these, liberty, intelligence and sensibility became more and more concentrated.

Every transformation ends by replacing the transformable by the untransformable. The exercise of life precipitates the unstable into the stable, the living into the dead. Life, indeed, passes from body to body. Dead or relatively stable matter is transformed into living or relatively unstable matter; but this "is only possible at the expense of an inverse and greater precipitation of the unstable into the stable. With true corpses, if such there were, life could never be remade." The evolution of the universe is therefore from absolute instability to absolute stability. Primitively, "every individual was a species," and there were no harmonising groups. When every particle of the universe has taken up a final position in relation to all the rest, there will be a single universal intelligence having clear consciousness of the whole universe as a single organism. This is the final term of the transformation of things.

The law of "the fixation of force" from which Prof. Delboeuf draws the conclusion that the transformations of the universe must have a term is for him both a psychological and a physical law. Its physical expression is of course the law of the "dissipation" or "degradation" of energy. The author has sought the solution of the problem of death, he tells us, "in that great law, the conquest of our century, according to which everything pre-

cipitates itself towards its own destruction in spite of, and because of, the very efforts it makes to maintain itself" (p. 2). That this law, if applied to the sum of things, requires a final term, is incontestable. It may be contended, however, that a different kind of final term would be more logically deduced. Instability, defect of equilibrium, Prof. Delboeuf says in one place, "is something," while stability is only a kind of residue from which nothing more can be obtained (p. 57). From this it seems to follow that the end of things, being absolute stability, must be the "absolute death" affirmed as the end in Mainländer's pessimistic *Philosophy of Redemption* (see MIND xi. 416). If the whole process of things consists in a perpetual diminution of "free" force, then the unity of the world ought to be placed, as it is by Mainländer, at the beginning and not at the end. The more the theoretical basis of the *Philosophy of Redemption* is examined, the more clearly it will be seen to be a perfectly coherent (perhaps the only coherent) metaphysical doctrine starting from the assumption of the law of the degradation of energy as the most generalised expression of cosmical change.

The precise extension of this law, however, is still a matter of dispute among physicists. Apart from any suppositions, such as are made in a recent scientific fiction, about unknown forms of energy, we may safely say that the law of the degradation of energy is not co-ordinate with the law of the conservation of energy, but is true only under special, and as yet imperfectly defined, conditions. Those who, like Prof. Delboeuf, apply it to the whole, ought to define clearly their assumptions as to the constitution of the whole. On slightly different suppositions, would not the process of things take the form of a cycle rather than of a movement from an absolute beginning to an absolute end?

In Prof. Delboeuf's theory of the relations of stable and unstable matter, and of "mechanism" and free intelligence, there is both a speculative element and a positive element. The speculative element consists partly in the theory of the whole process of things that has just been discussed, partly in a theory that acts of free intelligence or will are strictly undetermined. The distinction between the stable and the unstable, it is clear, is not bound up with the assumption that when once a certain portion of force is fixed, the possibilities of change are for ever diminished by so much. And, similarly, the rejection of indeterminism does not affect the psychological distinction drawn between "free" intelligence and fixed habit or "mechanism". The doctrine to which Prof. Delboeuf's theory is really opposed is not determinism, but the doctrine that regards mechanism or unconscious habit as an expression of the perfection of an organism, and consciousness as a sort of aberration expressive of defective function. Again, the psychological distinction of mechanical habit and free intelligence can be maintained independently of any attempt to discover a corresponding objective distinction, such as that between stable and unstable matter; though this last distinction, of course, has a value of its own. It may be

regarded as an expression in terms of chemistry and molecular physics of what has already been expressed physiologically in Prof. Herzen's "physical law of consciousness". With the whole exposition of the relations of stable and unstable matter, Prof. Herzen's recent statement of his psycho-physical law (in his *Conditions physiques de la Conscience*) ought to be compared. The two expositions illustrate the convergence of different lines of thought to the same result. They also show the illusory character of the attempt to make unconsciousness superior to consciousness. The formation of a mental "habit," the "fixation" of a portion of force, or the "stabilisation" of a portion of matter, may of course indicate a psychological advance; but (as Prof. Herzen shows in opposition to Dr. Maudsley) this advance does not consist in the transformation itself of intelligence into habit or instinct, but in the making possible, by the new habit, of a new kind of free consciousness superior to that which was possible before.

The more speculative parts of Prof. Delboeuf's essay are, as has been already said, put forth by him simply as speculations. He does not bring them into definite comparison, on philosophical grounds, with the type of speculation to which he opposes them, but is content to claim for them equal possibility. Such comparison would not be unprofitable. Much might be said of the relation of his general point of view to idealism, and of the relation of his physical to his psychological speculations. The philosophical value of the essay is, however, less in any completed metaphysical doctrine than in its varied suggestions. In view of this, it will perhaps be best to refrain from further criticism, and not attempt to fix in a rigid form what is for the author an attempt to break through the limits of one dogmatism rather than to construct another.

THOMAS WHITTAKER.

Psychologie in Umrissen auf Grundlage der Erfahrung. Von Dr. HARALD HÖFFDING, Professor an der Universität in Kopenhagen. Unter Mitwirkung des Verfassers nach der zweiten dänischen Auflage übersetzt von F. BENDIXEN, Gymnasiallehrer. Leipzig, Fues's Verlag (R. Reisland). Pp. vi, 463.

The translation into German by an able hand of the Second Edition of Dr. Höffding's work on Psychology places an important contribution to the science within reach of the general student. As might have been expected, the Danish treatise follows pretty closely the traditional lines of German psychological investigation. At the same time it has the independence of an outside standpoint. One may say, indeed, that the author's manner of dealing with his subject has been determined quite as much by British as by German models. And to say that the total influence of recent European discussion is large and pervading does not detract from the merit of the work. For it is one of the most promising characteristics of the present state of psychological science that enough has been fixed in the shape

both of positive results, and, what is equally important, of issues demanding solution, to compel all future workers to follow a certain prescribed course. Dr. Höffding has fully recognised this necessity, and he throws himself cordially into the work of co-ordinating and completing the labours of his immediate predecessors. Possibly some may find that now and again the desire to harmonise and systematise the results of the many detached lines of inquiry of which recent psychology consists has led to the appearance of an eclecticism, to the semblance of unity of principle rather than to its reality. Yet a measure of eclecticism seems unavoidable in the present stage of psychological progress. And however this be, it is certain, as Dr. Höffding very clearly sees, that the final unification of psychological results is a work that will have to transcend the limits of the science and call in the co-operation of philosophy.

The work may be said to fall into two main divisions—a general and a special psychology. In the first three sections we have a discussion of the fundamental ideas of the science—*viz.*, its object and method, the relation of mind to body, and of the conscious to the unconscious. This general part occupies about a fourth of the volume. Then follows an account of the common three-fold division of psychological elements, and a detailed exposition of the successive manifestations of each in the customary order—intellect (*Erkenntniss*), feeling and volition. Sensation, which is dealt with in its general features only, forms the first subsection under intellect, though its emotional side or *Gefühlston* is carefully considered apart, under the head of feeling. It may be added that the phenomena of intellection and feeling are much more fully dealt with than those of volition. One misses, for example, an adequate recognition of the problems coming under the head of inhibition. The work concludes with a slight though instructive account of individual character.

The author's point of view is pretty clearly indicated at the outset. He claims, as against Lotze, the utmost liberty for psychology as empirical science from all metaphysical presumptions. Psychology has no need of any conception of soul, if by this is meant an absolute being or underlying substance. On the other hand, psychical phenomena must not be carelessly swamped in the sea of biological facts. A truly scientific conception of mind is as far removed from materialism as from spiritualism. Dr. Höffding recognises to the full the services of biological science to psychology, and in his interesting section on mind and body shows how the psychologist is compelled to follow out the intimate connexions of the mental life with organic processes and with the activity of nature as a whole. But he sees at the same time that in its higher manifestations of conscious experience it is something determined by its own forms and laws, and something to be investigated by its own method. The chief characteristics of this conscious life are said to be: (1) change and contrast as condition for the genesis of single elements;

(2) retention and reproduction of elements previously given ; and (3) the inner unity of recognition. A fact of consciousness is for our author not an isolated event, as Hume and his followers seem to think, but something essentially bound up with other elements. In other words, the world of consciousness is strongly marked off from the material world by the inner unity of its elements—a unity through which they are seen to belong to one and the same subject, and which has its typical expression in recollection (*Erinnerung*). Hence the author follows Kant in regarding synthesis as the fundamental form of all consciousness. While thus recognising the unity of conscious life as something *sui generis*, Dr. Höffding thinks we may find its correlative or, as he does not hesitate to say, its parallel in the constitution of the nervous system ; and he winds up his discussion of the relation of body to mind by seeking to bring out this parallelism, and to interpret it by the hypothesis of a double-faced unity, made familiar to English readers by Lewes and others. In so doing he takes considerable pains to distinguish between the legitimate scientific use of such a hypothesis and the adoption of it as a final metaphysical interpretation ; but he hardly succeeds in showing that it is possible to transcend the phenomenal distinction of the mental and the material without encroaching upon the territory of ontology. Of greater psychological interest is the way in which he applies his conception of consciousness as something essentially complex and united to the most elementary psychical states—*viz.*, sensations. The various grades of mental life from the unconscious to the clearly conscious are made to illustrate the same essential characteristics of consciousness.

The detailed exposition of the several directions of the mental life is always interesting and instructive. It may be sufficient here to single out some few of the more important points.

Under Sensation Dr. Höffding, conformably to the general idea of consciousness just indicated, lays a new emphasis on the law of relation, or, as Dr. Bain has phrased it, the relativity of mental states. And here he meets with good effect Prof. Stumpf's recent criticism of this principle. The latter distinguishes sharply between the sensation as something independent and absolute and the mind's judgment on the same. But our author reminds him that "every proper judgment is preceded by the immediate reciprocal relation of the sensations themselves, in which we have the very first form of conscious activity which in the higher stages we call comparison and judgment". And he adds that "for so elementary a relation as this, language has formed no suitable expression". The simplest act of perception is for our author the recognition or identification of a sensation, an operation which involves no consciousness of the external origin of the sensation. What is ordinarily called a perception is according to this view a "compound perception". The relations of the several elements in the perceptual process and the differences between this and "free representation" are set forth

by help of symbols, a device for which Dr. Höffding, like Mr. Ward and other recent psychologists, shows a strong liking. The symbolic representation of the two great laws of association, and of their mutual implication, is well worthy of study even after Mr. Ward's recent masterly treatment of the same subject. The higher processes of thought, abstraction, judgment, &c., are, it is hardly needful to say, regarded as merely a rendering more explicit and precise under the control of the will, of the relations involved in the more elementary intellectual operations. The discussion of the space-question is cautious and critical, and shows the author's power of dealing with a highly complex problem impartially on all its sides.

The whole exposition of feeling and its laws is marked by fine knowledge of the phenomena and clear scientific insight. The relation of feeling to intellection is admirably set forth. Pleasure and pain are present in the most primitive mental states, and therefore cannot be regarded as a mere result of the interaction of intellectual elements. At the same time, in all its higher phases, feeling is pervaded with and modified by such intellectual elements. And it is the special object of this section to trace the gradual developments of the elementary feelings and their transformations into a wide variety of forms under the action of growing experience and intelligence. Here the author makes good use of the first manifestations of feeling in infancy, and of the more striking and picturesque illustrations of human passion presented in literature. It may, however, be doubted whether it is possible to develop the wide variety of emotional states from a common elementary root in the way here attempted. In any case, the manifestation of a number of typically distinct feelings in the first years of life might suggest that ancestral experience and heredity play a larger part here than Prof. Höffding, who is generally a cordial acceptor of evolution, seems to recognise. A further objection may be taken to the way in which the author defines the relation of the intellectual and the emotional factor in the reproduction of feeling. There is no doubt that all *definite* revival of feeling depends on intellectual processes of association in the way so ably illustrated by Dr. Höffding. But when he writes: "Thought is the more mobile part of our being: feeling forms the foundation to which effects are only gradually transmitted from the more mobile surface," he seems to be overlooking important facts. Is it not at least as common for feeling in the vague shape of dim recalling or foreboding to precede definite ideation as for this last to precede emotional disturbance? Here perhaps a more adequate grasp of the relations of sub-conscious to conscious mental processes would have been of service. But though now and again the critical reader may take exception to general statements, he will lay down the work with a feeling of deep indebtedness to the author for what on the whole is a masterly and interesting elucidation of the dark region of psychological fact.

JAMES SULLY.

VI.—NEW BOOKS.

[*These Notes (by various hands) do not exclude Critical Notices later on.*]

- A *Dictionary of Philosophy in the Words of Philosophers*. Edited with an Introduction by J. RADFORD THOMSON, M.A., Professor of Philosophy in New College, London, and in Hackney College. London : R. D. Dickinson, 1887. Pp. xlviii, 479.

This *Dictionary* has been based on a collection of passages from philosophical writers made by "a collator of experience". The editor's part has been to excise on the one hand and extend on the other, with the view of holding the balance even among the different schools or the different topics. In particular, it appears to be due to the editor that a fair representation has been given of the later scientific psychology as well as of the recent Kantian movement in English philosophy. To him also is due the present arrangement of the whole mass of extracts—according to principles which, if nowhere explicitly stated, are more or less implied in an Introduction that deals successively with the definition, divisions and origin of philosophy, its history in general and its present state in this country. The arrangement is topical throughout, without other alphabetical clue than is supplied by two concluding indexes, of names and of subjects. The index of names is, in its way, pretty complete; not so the other. This is far too little detailed to be of real service, especially as no table of contents in their actual order is anywhere set out. The *Dictionary*, in point of fact, affords a good deal more information than the index of subjects gives any notion of: for example, Leibniz's important distinction of symbolical and intuitive knowledge is not omitted, but is far from having its presence sufficiently suggested by "Knowledge, Application of," even when the index of names adds "Leibniz, Knowledge". The absence of a table of contents, setting out the main topics in order of treatment and the steps of the treatment in order, is to be regretted in the interest of the student, more than in the interest of the reviewer. The reviewer can, at a certain cost of time, turn over the pages and discover that there are twenty-four main topics in all; that the first two are general or introductory ("Designations, &c.", "Mind"); and that the remaining twenty-two are grouped under three heads of "Psychology and Philosophy"—(A.) "of Cognition," (B.) "of Feeling," (C.) "of the Will"—and one of (D.) "Moral Philosophy or Ethics". The last (§§ 19-24) includes as final main topic "The Immortality of Man". Under "Cognition" (§§ 3-13) the most noticeable feature is that the three closing sections (pp. 223-91) are taken up with an attempt to characterise the chief philosophical thinkers or schools—ancient, mediæval and modern—by extracts almost entirely drawn from books written about them. Regarding the *Dictionary* in general, it is not to be denied that good and intelligent use has been made of the material collected, perhaps as good use as was at all possible; nor should the editor's manifest effort to give fair and full representation of views with which his Introduction shows him to have least sympathy, remain unacknowledged. It is the original collector's work that, as far as its quality may be judged from the evidently extensive remains of it, lies most open to criticism. Confining himself (as the editor does too) for the most part to modern books in English (original or translated), the collector seems, first of all, to have been excessively liberal in his allowance of philosophical character to particular works, and then, among works to which that character might

not unfairly be accorded, to have been prone to make chief use of some that can hardly be called the most important or even, for effective and condensed statement, the most transcriptable. The consequence is that, after all editorial pruning, there are many pages (easily to be remarked) that are by no means wisely filled; while from others much is found missing that should have been freely supplied. Take, in the way of omission, the single example of "Unconscious mental action," disposed of, p. 46, in two extracts from Carpenter's *Mental Physiology* and a few lines from Mill's *Hamilton*, followed as to "Subconsciousness" by another extract from Mill (not containing the word) and one from Sully's *Psychology*: not a word from the long discussion in Hamilton's *Metaphysics* nor the slightest mention of Leibniz's 'obscure perceptions'! But it seems ungracious to dwell further on shortcomings, when to have carried through the work at all, even within the narrow and artificial limits set, means no light amount of protracted and anxious labour. Though, neither in conception nor in execution, is this the Dictionary of Philosophy that one could desire for the use of English students, it brings together a multitude of passages from philosophical writers that cannot be read without great and varied interest and disposes them in a form that would—if supplemented by a fully detailed index of subjects—be found serviceable for some purposes of reference even by the most advanced.

Romantic Love and Personal Beauty, Their Development, Causal Relations, Historic and National Peculiarities. By HENRY T. FINCK. 2 Vols. London and New York : Macmillan & Co., 1887. Pp. x., 424; viii., 468.

These fascinating volumes are, as the title indicates, first of all an historical and comparative "monograph" on the sentiment of "Romantic—or pre-matrimonial—Love," which, in the author's view, "is a modern sentiment, less than a thousand years old". "Not till Dante's *Vita Nuova* appeared was the gospel of modern Love—the romantic adoration of a maiden by a youth—revealed for the first time in definite language." "And even Dante was not entirely modern in his Love." "He became quite deaf to the fundamental tone of love, and heard only its overtones. And herein lies his inferiority to Shakespeare," for whom it remained "to combine the idealism with the realism of Love in proper proportions". "Shakespeare's Love is Modern Love." Within the last two centuries the poets and novelists have caused love to assume gradually "among all educated people characteristics which formerly it possessed only in the minds of a few isolated men of genius". The art of Courtship that springs out of Romantic Love "is the latest of the fine arts, which even now exists in its perfection in two countries only—England and America"; for Romantic Love depends "on the freedom and the intellectual and æsthetic culture of woman"; and in other civilised nations there is more or less complete suppression of one or both of these conditions. Although in developing his historical thesis the author is sometimes perhaps "too sweeping" (as he himself remarks of a criticism of Schiller on the Minnesingers), this thesis is one to which no one can refuse a hearing who does not deny altogether that there is any historical evolution of emotions. And occasional exaggerations, such as what is said of "the absolute silence of Greek literature on the subject of prematrimonial infatuation" (i. 122) are corrected by the general exposition. According to the author's view in its full development, there are in antiquity the beginnings, but only the beginnings, of Romantic Love. In the early Middle Ages, these disappeared under the asceticism of Church Fathers and the general barbarism of the period. Renewed by chivalry, and above all by the German Folk-songs,

they were at length combined by Dante and Shakespeare into the modern sentiment, with all its distinctive characters or "overtones". Of these there are in all eleven (i. 48-52); the last enumerated being "Admiration of Personal Beauty". This "aesthetic overtone of Love," which "is commonly heard before and above all the others," tends more and more to become of "preponderating importance". Modern Love depends especially on the charm of individual expression, to which the Greeks were indifferent, and this in turn on intellectual cultivation. The modern development of Romantic Love may be compared with the modern development of the art of Music; "the individualisation of Beauty and character" being comparable to the discovery of harmony (ii. 137-8). All this is developed with a liveliness of style and an abundance of interesting observations of which it is impossible to give an idea in a summary. Most of the qualifications and distinctions that a critic could suggest find their proper place in the volumes. But Mr. Finck does more than develop the evolutionary theory that his title promises. The special interest of the book is in its seeking rational grounds for freedom of matrimonial choice. Regarding everything from the point of view of the race, the author rejects at once the French system of "marriages of reason" and (implicitly) the proposals of those ancient theorists and modern anthropologists who have thought that choice should be based on other reasons than personal preference, and decides for the "Anglo-American" system. To get at his conclusion, he starts from a discussion of Schopenhauer's theory; and his own theory is in reality Schopenhauer's without the pessimism, and with scientific verification. "Apart from the suggestive details of his essay," Mr. Finck says, "Schopenhauer's merit and originality lie, first, in his having pointed out that Love becomes more intense the more it is individualised; secondly, in emphasising the fact that in match-making it is not the happiness of the to-be-married couple that should chiefly be consulted, but the consequences of their union to the offspring; thirdly, in dwelling on the important truth that Love is a cause of Beauty, because its aim always is either to perpetuate existing Beauty through hereditary transmission, or to create new beauty by fusing two imperfect individuals into a being in whom their shortcomings mutually neutralise one another" (ii. 73). Romantic Love, with its free choice, the preponderance in it of the aesthetic element, and its individualisation, thus promotes the interests of the race in the highest degree. And "Anglo-American Love is Romantic Love, pure and simple, as first depicted by Shakespeare, and after him, with more or less accuracy, by a hundred other poets and novelists" (ii. 37). "Love is the cause of Beauty, as Beauty is the cause of Love;" but it is only one cause. "Personal Beauty has four sources"—Health, Mixture of Nationalities, Romantic Love and Mental Refinement. When the relations of all these are considered, it is seen yet more clearly in what way all the interests of the race are inseparably associated with Romantic Love.

Psychology. The Motive Powers. Emotions, Conscience, Will. By JAMES MC COSH, D.D., &c., President of Princeton College. London: Macmillan & Co., 1887. Pp. vi., 267.

This is the promised sequel to the author's *Cognitive Powers*, noticed in MIND xi. 586. While admitting the importance of the modern threefold division of the mental powers, Dr. McCosh insists that "it is of moment to keep up the old twofold division as being the deepest, as having run through the ages, and as being embodied in our habitual thoughts and in common literature". The modern distinction, he thinks, "leaves out the moral power or conscience, which is entitled to have a separate place as one of the characteristics of man, specially distinguishing him from the

lower animals". The twofold division, as he points out, corresponds to Aristotle's distinction of the "Gnostic" and the "Orective" powers; and, throughout, he seeks an Aristotelian basis for his psychological positions. "The motive powers" are divided into "the emotions, the conscience and the will". The work, accordingly, falls, after a short introduction, into three parts: "The Emotions" (pp. 7-192), "The Conscience" (pp. 195-227), "The Will, or Optative Power" (pp. 231-267). The section on the Emotions is divided into two books of approximately equal length, entitled "The Four Elements or Aspects of Emotion" and "Classification and Description of the Emotions". This part is largely an abridgment of the author's work on *The Emotions* (noticed in MIND v. 290). An outline of its leading positions will be found in the notice just referred to, and in a Note by the author in MIND ii. 413-15. As regards Conscience, Dr. McCosh's position is that "by the moral sense we know more than we do by the senses, inner or outer" (p. 196). "The Conscience is not merely co-ordinate with the other powers: it is above them as an arbiter and a judge. . . . In fact, it is the Practical Reason" (pp. 209-10). The moral power "is in all men native and necessary; but it is a norm requiring to be evolved". The facts of its historical development "may be admitted, while we hold that the moral power could not have been produced without a native moral norm any more than a plant or animal could have been produced without a germ". That which, in intelligent beings, is commended by the conscience, is "love ruled by law" (p. 227). Will is something different from an exercise of the understanding, of conscience or of the emotions. Moral good and evil consist essentially not in emotion nor in the possession of a conscience, any more than in the mere external action, but in "an act of will". Responsibility is coextensive with will. In the discussion of the place of voluntary preference in virtue, of the relations of habit and responsibility, and of the characters of virtue and vice, the author's dependence on Aristotle is especially evident. The will, he contends, "has freedom," because it is not "determined by motives," if by motives be meant "powers out of the will acting independently of it" (p. 259). The influence of will in mental acts that are not classed as volitional is pointed out without exaggeration. The "main Secondary Law" of Association is found to be "that those ideas come up most frequently on which we have bestowed the largest amount of force of mind, and this may be intellect, feeling or will" (pp. 243-4). "The energy bestowed on an idea" "commonly takes the form of Attention," which is an act of will. Altogether, the work has the merits of the author's previous work on *The Emotions*. The section on Will especially is full of sound psychological distinctions and observations.

The Game of Logic. By LEWIS CARROLL. London: Macmillan & Co., 1887. Pp. 96.

In this pretty little volume, the author of *Alice in Wonderland*, without surrendering his old playful purpose, tries to give youthful readers some general notion of logical processes. The design is worthy of all praise: for nothing should be easier, if teachers were knowing enough, than to convey with the first lessons in grammar a great deal of useful logical doctrine; and children might have much amusement of a cheap kind in watching the logical practice of their elders, even if not set to regular games with propositions and arguments. It is not so clear that the author has taken the best way for working out his purpose. He has a new mode of graphically representing propositions (by full or empty compartments within a square), which is sufficiently ingenious, but which seems to put rather heavy shackles upon the juvenile reasoner exposed to the common speech

of human kind. When the universal affirmation, "All new cakes are nice," cannot be understood and worked with except as made up of the two propositions, "Some new cakes are nice" and "No new cakes are not nice," one begins to doubt whether the author has not been a little more concerned to be inventive than either edifying or amusing. And if the instruction might be simpler and more effective, the interpolated humour also might be more happy: at least it is not easy to imagine that the boy or maiden who can follow the author's rather technical exposition will be tickled by quips that appear suited for only *very* young children. But whether the author succeeds or not with his proposed aim, this scheme of graphic representation is by no means undeserving of attention by the side of the others that have been devised of late years. Like some other of the innovators, he can do scant justice to the traditional system, as at p. 35, where the mare's nest of the two negative premisses is again discovered, with an air of importance almost as grave as Jevons displayed on the occasion.

Studies and Exercises in Formal Logic, including a Generalisation of Logical Processes in their Application to Complex Inferences. By JOHN NEVILLE KEYNES, M.A., University Lecturer in Moral Science, Cambridge. Second Edition revised and enlarged. London: Macmillan, 1887. Pp. xii., 455.

The usefulness predicted for these *Studies* when reviewed in MIND ix. 301 is proved by the call already for a second edition. The whole book has been carefully revised, and considerable parts of it have been rewritten, with the result of enlargement by about 30 pp. It is a distinct improvement that the unanswered exercises are now separated out from the expository matter, and placed at the end of the chapters; also that an index has been added. In its new form, the book will be still more helpful to students than before.

A Treatise on the Principle of Sufficient Reason. A Psychological Theory of Reasoning, showing the Relativity of Thought to the Thinker, of Recognition to Cognition, the Identity of Presentation and Representation, of Perception and Apperception. By MRS. P. F. FITZGERALD. London: Thomas Laurie, 1887. Pp. xvi., 410.

The philosophical purpose of this book is described in the sub-title. The "two doctrines" that constitute its foundations are—"first, the existence of God, who from His very nature is, and must be, good, because He is the Source and Giver of all good, and Ordainer of the moral law; and secondly, that of the necessity of the *divinely-ordained counterpart union* of every human soul with its complementary spirit". In other words, "*love, human and divine, is the secret of happiness—the true Best for Being*" (p. 3). "The complete idea or mental representation of Being, which constitutes intelligence, νοῦς, the Gnosis, the light that lighteth every man that cometh into the world," is "present in each individual man through his faculty of reflecting on the presentations of his own inner Being, and through the logical principle of what is experienced in being, generalising through comparison of less and greater, until he arrives at the idea of perfect, absolute Being" (p. 243). What is notable in the author's development of this form of mysticism is the insistence on permanent distinctions of personality. The individuality is not to be suppressed, but "self-preservation" is "the first law alike of the animal and the spiritual life" (p. 228). "If we choose to sacrifice our life for love, it is still because it is our own joy so to do. Feeling is not to be extinguished for the good for Being, as the Bouddha Sakhya Mouni taught; for as the blood is the

life of the beast, so is love the life of the spirit. Being is to be developed by and through natural, designed relativity ; through the harmonious union and communion of spirits with each other, and with the Father of Spirits—this is the true unity of Being, the true service of God." In spite of what the author calls its "not very orderly elaboration," there is much in the book that is philosophically suggestive. It is illustrated by the results of multifarious reading, especially among the philosophers and poets.

The Cosmology of the Rigveda. An Essay. By H. W. WALLIS, M.A., Gonville and Caius College, Cambridge. Published by the Hibbert Trustees. London : Williams & Norgate, 1887. Pp. xii, 130.

"The object of this essay," the author says, "is not so much to present a complete picture of the cosmology of the *Rigveda*, as to supply the material from which such a picture may be drawn. The writer has endeavoured to leave no strictly cosmological passage without a reference, and to add references to illustrative passages when they appeared to indicate the direction in which an explanation may be sought." The result is a very full account of the imagery by which the Rishis represented the origin of things, under the heads of "The Building of the World," "Generation" and "The Sacrifice" (cc. i.-iii., pp. 16-90). The general conclusion may best be summarised in the author's own words : "We have now passed in review the three most circumstantial explanations of the origin of the world. In the first chapter it was regarded as a work of art ; and since the principal manufacture known to the men of the time was the working of wood, the world was pronounced a production of builders and joiners. In the second chapter the origin of the world was ascribed to the agency of that visible process which is the cause of all natural, as opposed to mechanical, production. In the argument of this chapter (c. iii.) the origin of the world was supposed to have been effected by a similar instrumentality to that which is represented as the most efficacious in the hands of man, the formal sacrifice. The three explanations are not mutually exclusive ; any two of them or all three are frequently combined together in one verse. The classification adopted in this essay is, therefore, to be regarded as one of practical convenience only. Further, it must not be supposed that what is here described as the system of the Rishis was their exclusive possession. There may have been laymen whose views were more sacerdotal than those of the priests ; as there may have been, and doubtless were, priests to whom speculation was dearer than ritual. On the other hand, a classification based on later forms of thought would have been positively misleading. We may very easily persuade ourselves that in some isolated verse we have discovered the starting-point of a later philosophy, where the comparison of similar passages shows that it was only the poverty of our imagination which confined the meaning within our own particular range of thought. The *Rigveda* must be made its own commentary. It is a not infrequent occurrence that a whole complex of modern ideas finds its most happy and appropriate expression in an old term, or a proper name or attribute, or in the words of an ancient saying. The words themselves have contributed nothing to the formation of the ideas ; they had lost their first meaning and were fast falling into oblivion, when the breath of a spirit from another sphere inspired them with a new vitality." The great difference of the speculations of the *Veda* from those of the *Upanishads* and of later philosophy is that the former are more disinterested ; representing the origin of the world in analogy with the known modes of the production of things, but with no thought of purpose. The three chapters above referred to are preceded by an introduction on the distinguishing charac-

teristics of the *Rigveda* and followed by a chapter on "The Order of the World" as conceived by the Rishis (c. iv., pp. 91-108), and an appendix on "The Cosmography of the *Rigveda*" (pp. 111-117). [Since these lines were written, a few weeks ago, the death of the young author has been announced. A life of much promise is thus cut short.]

Agnostic Problems, being An Examination of Some Questions of the Deepest Interest, as Viewed from the Agnostic Standpoint. By RICHARD BITHELL, B.Sc., Ph.D., Author of *The Creed of a Modern Agnostic*. London : Williams & Norgate, 1887. Pp. viii., 152.

This is a sequel to *The Creed of a Modern Agnostic*, noticed in MIND viii. 456. Its contents are sufficiently indicated in the sub-title. "The Agnostic standpoint," as defined by the author, is that "that which comes within the sphere of consciousness may be known. . . . But whether the realities which exist outside the sphere of consciousness correspond in any way with the conceptions of which we are conscious, is a question which we have no means whatever of solving." "On the side of the Knowable," the Agnostic "finds and cultivates his Science ; on the side of the Unknowable, he finds an illimitable arena for the exercise of Belief and Faith".

The Philosophy of Religion on the Basis of its History. By Dr. OTTO PFLEIDERER. Vol. II., "Schelling to the Present Day," translated by ALLAN MENZIES, B.D. London: Williams & Norgate, 1887. Pp. ix., 316.

The present volume, following upon the one noted in MIND xi. 587, completes the historical half of Pfeiderer's work : the "genetico-speculative" half remains to be similarly broken up into two volumes. (It was an error in previous notice to speak of the translation as to be in three volumes, artificially divided.) The rendering continues worthy of the subject. Besides a few new sentences on the Zürich theologian Biedermann, the author, with English readers in view, has added a paragraph (p. 309) on Prof. H. Drummond's *Natural Law in the Spiritual World*, and gives at pp. 182-6 an estimate of Mr. M. Arnold's contributions to the theory of religion. He finds Mr. Arnold's conception of a "Not-ourselves" to be not less metaphysical and much vaguer than that for which it is sought to be substituted, and, after referring to his historical interpretation, thus sums up : "Arnold is no doubt a writer of great and many-sided acquirements ; all that he writes is pleasant to read and full of suggestions : but he possesses no real grip either in philosophy or in history, and if he thinks he can make this want good by dint of clever and eloquent writing, he is mistaken ; nor will it mend his error to exalt himself, and make his readers merry at the expense of those who have treated serious problems more seriously than he".

Matter and Energy: Are there two Real Things in the Physical Universe? Being an Examination of the Fundamental Conceptions of Physical Science. By B. L. L. London : Kegan Paul, Trench, 1887. Pp. 85.

This is an attempt to reconcile Science and Idealism by the assumption that the reality postulated by science is not Matter but Energy. Matter is merely phenomenal ; bodies are only "elements of our sense-experience," not "independently existent things". "Take an example—a stone for instance. Do you, the reader asks, revert to Idealism, and say it ceases to exist when you cease to experience it ? We reply that the phenomenon we call a stone, which belongs to the class we call bodies, does so cease ; but that there continues to exist its external cause, which, however, is

nothing more than certain forms of so much Energy transforming itself in certain ways." "Energy alone is *the* real thing, of which we have no immediate experience, but experience only its results." Space, the primary and secondary qualities of body, and the different chemical kinds of bodies, are all explicable in terms of Energy and its transformations (pp. 69-74). Energy is really indestructible. Matter is "*historically* indestructible,—real as an *event*, but not real as an independently existing entity". "The conception of material bodies, if freed from the erroneous assumption of independent reality, is a most useful abbreviation—like an algebraical symbol—of what would in terms of Energy alone take much longer to express." "In the grand doctrine of Energy, as a thing not perceived by the senses, but apprehended by the intellect and discovered by the reason alone," Science has "furnished Philosophy with the long-sought conception of a consistent rational, unsensual, real 'universal'".

Morality and Utility. A Natural Science of Ethics. By GEORGE PAYNE BEST, B.A., M.B., Cantab. London : Trübner & Co., 1887. Pp. vii., 200.

This study had its origin in the author's conviction that the Moral Law, having the characters of Absoluteness, Universality and Permanence, cannot be identical with Utility. The conclusions to which he has been led on from this starting-point are, he says, somewhat different from those at which he expected to arrive. For while he arrives at the distinction between "truth of Utility" and "truth of Morality," corresponding to the distinction between approval of actions for their useful effects and approval of them for their conformity to the Absolute Right, Morality or Justice of intuitionist moralists, he also finds that "truth of Morality" is "not the kind of truth that can be put into practice". The absolute moral ideal is only applicable in an ideal world, the conditions of which are inconsistent with reality. An absolutely uniform law can only apply to an absolutely equal population ; and for a population to be absolutely equal, it must consist entirely of adult members, all asexual and immortal (p. 77). Buddhist and Christian Monachism and modern "Social Democracy" are alike attempts to realise parts of the moral ideal (which can only exist as a whole) in the world of facts. The result of the socialistic "attempt to take parts from the ideal world, and mix them with the world of facts," must be "to make the world of facts infinitely worse than it is for everybody". "The Moral Sense, truly, declares that men are equal. Observation of the world of facts shows that men are altogether unequal." "The existing order of things is not moral, but util." The explanation of the discrepancy between Morality and Utility is that Morality, like mathematical science, feigns a greater uniformity than really exists. "In the case of Mathematics, we are really dealing with our own ideas ; and, even when we apply those ideas to the concrete, we apply them only to certain abstract elements of that concrete. But with Morality it is otherwise. We are dealing with the world of men, women and children, in all their concreteness and difference ; but we are treating them as if they were mere ideas. The upshot is that, though Morality may be true enough for our ideas ; or for men and women, if they were, as treated in thought, really equal ; as applied to actual men and women, it gives a false result." Absolute Morality, then, is an illusion,—but an illusion that has had good effects, not only in the production of ideal characters, but in the gradual improvement of things as estimated by the utilitarian test. "Suppress Morality (as the Utilitarians have done), and you have destroyed—at least in theory—the golden bridge by which man passes out of the category of personal considerations to those of a wider sphere. *Morality is the decoy*

which leads us to Virtue." "Now Virtue, with its correlated Duty and Obligation, is a part of Utility—it is consistent with Utility: which Morality is not. In Virtue the interests of the individual and of Society are reconciled."

Absolute Relativism; or the Absolute in Relation. By WILLIAM BELL M'TAGGART, late Captain 14th Hussars. Vol. I. London : W. Stewart & Co. Pp. viii., 133.

The author's ultimate purpose is a reconciliation of the religious and the scientific philosophy of the day. "The fetishes of the hour are personality and intelligence of the 'All-upholder' on the one hand, as against 'non-personality and mechanical necessities of the ultimate substratum'. . . . Both camps seem regardless that the other holds at least one aspect of the truth, and that a higher knowledge and a wider generalisation may unify the two into All-personality and All-theism." His purpose in the present volume—divided into three parts, entitled "Prolegomena" (pp. 1-22), "Materialism" (pp. 25-86) and "Idealism" (pp. 91-133)—is by successively reviewing materialistic and idealistic philosophy, as stated by "their accepted representatives," to arrive at the unquestionable truths of each system in the form of certain ultimate "axioms". What remains is to find out how the truths of these and other philosophies limit one another, and how they may yet "exist synchronously within Infinity". The result attained so far is this:—"Having started with the postulate I=I, in the endeavour to ascertain, by the avenues of experience and reason alone, what that Ego was or is, we have lighted upon the certain demonstration that it is complex instead of simple, and that the postulate, the I, includes the postulate and demonstration of the existence of the Not-I also".

Life of Adam Smith. By R. B. HALDANE, M.P. ("Great Writers.") London : Walter Scott, 1887. Pp. ix., 161, x.

More than half of this volume is devoted to the account and consideration of Smith's work as an economist; his work as a moralist is disposed of in a short chapter (pp. 56-73), following upon a graphic sketch of the life. The author presses the charge of want of system too far against the *Theory of Moral Sentiments*, whether by itself or in comparison with Hume's ethical performance. Great as Hume's general philosophical importance is, it can hardly be said of him as a moralist that it was he "who first made it plain that Metaphysics and Ethics are inextricably intertwined" (p. 25); and if Smith was no metaphysician, it cannot therefore be said that he did not take up a position of permanent mark, after or by the side of Hume, in the ethical movement of his century. At p. 65, in reference to Smith's exclusion of "Utilitarian" considerations, it is somewhat loosely remarked that Hume also made light of such when he refused to find "the guiding principle of conduct in the tendency to seek self". And is Hume's proclamation of the principle of Utility well described (p. 66) as a "suggestion thrown out" in "somewhat cynical scepticism"?

Proceedings of The Society for Psychical Research. Part xi. London : Trübner & Co., 1887. Pp. 209-605.

Since last notice in MIND, two Parts of these *Proceedings* have appeared. Part x., unfortunately, is not at hand for notice, but it would be a pity to therefore delay drawing attention to the excellent work that is to be found within Part xi. Whatever difference of opinion there may be as to some of the Society's lines of activity—on the conclusiveness of the case for "Telepathy," in particular, see an article, "Where are the Letters?" by Mr. A. Taylor Innes in *The XIXth Century* for August—there can be no

question about the value of the work that has been done in exposing the pretensions and frauds of certain persons that have lately preyed upon human credulity. An important paper by Mrs. H. Sidgwick (in the previous Part) on her experience of spiritualistic mediums is here followed up by an elaborate memoir (pp. 381-495) on "The Possibilities of Mal-Observation and Lapse of Memory from a Practical Point of View," the joint-work of Mr. R. Hodgson and Mr. S. J. Davey. Mr. Hodgson (who exploded the Blavatsky imposture) writes a general "Introduction" to the "Experimental Investigation" which he helped Mr. Davey to conduct; Mr. Davey being a man of first-rate conjuring powers, who has been able to equal (if not surpass) all that has been achieved by professional "mediums" in the way of slate-writing. Never pretending with his sitters to any supernatural powers, and even putting them on their guard against trickery, Mr. Davey has yet been readily credited with thaumaturgic attributes, and the investigation consists mainly in a critical comparison of the written reports furnished by the sitters, of what they saw, fancied they saw or failed to see. Nothing could be more instructive than the evidence thus obtained of the fallibility of human observation and memory, especially under the sway of emotion; the different emotional moods of the various sitters—according as they knew nothing, little or much of the actual conditions under which the phenomena were produced—giving to the reports the liveliest diversity of hue. Beside other papers of psychological interest, the Part contains two important researches by Mr. E. Gurney. One on "Stages of Hypnotic Memory" (pp. 515-31) adds most striking evidence to what he before adduced in MIND ix. 110 ff., x. 161 ff., as to the discontinuity of memory between different stages of the hypnotic trance and its continuity between recurrences of the same stage,—within limits, however, that are now for the first time approximately defined. The other memoir on "Peculiarities of certain Post-hypnotic States" (pp. 268-323) is still more remarkable for the light it throws, by a protracted series of experiments (some, with planchette, of a quite novel description), upon those most puzzling manifestations of "secondary intelligence" that are disclosed in the performance, more or less unconsciously, within the waking state of orders given in the hypnotic trance. In both memoirs the writer touches, with a skilful hand, on the philosophical implication of the facts, as bearing on the question of personal identity.

Essai de Psychologie Générale. Par CHARLES RICHET, Agrégé à la Faculté de Médecine de Paris. Avec figures dans le texte. Paris : F. Alcan, 1887. Pp. xiv., 193.

"General psychology," in the author's conception, is a synthesis of psychological facts, viewed in their general aspects, from the knowledge of their ultimate elements made possible by physiology, of which psychology is simply "the obscurest chapter". A notion of his procedure is given by the order of treatment he adopts, which is as follows:—(1) "Irritability," (2) "The Nervous System," (3) "Reflex Movement," (4) "Instinct," (5) "Consciousness," (6) "Sensation," (7) "Memory," (8) "The Idea," (9) "The Will". "Cellular irritability," which includes both "sensibility" and "motor reaction," may be regarded as "elementary psychical life". It manifests itself under the three forms of "reflex action," "instinct" and "intelligence". The characters alike of reflex action and of instinct are "fatality and finality". That is to say, they take place for the advantage of the organism or the species, but without consciousness of their end. All the distinctions of instinct from reflex action depend on its greater complexity. "Instinct, or at least complicated instinct, supposes unintelligence, just as intelligence supposes the absence of instinct." Man has

reflex actions and intelligence, but no instincts properly so-called. Consciousness is "a phenomenon superadded to movement and independent of it," and modifying neither the external excitation nor the reaction of the organism. The author recognises the difficulty of admitting "unconscious sensibility" and "unconscious sensations," but uses the terms with a proviso against misunderstanding. "Sensation with consciousness," in his definition, is "perception"; "perception with attention" is "apperception". Animals, down to "the middle of the zoological scale," probably have consciousness, "at least vague and confused"; but there is no profit in observations on any but the human consciousness. In man there is consciousness of "sensation" and consciousness of "motility," to which a still more important element is to be added, *viz.*, memory, which may be said to create consciousness and the unity of the Ego. Consciousness, in ultimate analysis, is "a succession of states of consciousness with recollection". "Sensation is a physiological phenomenon, and perception is a psychological phenomenon." The laws of sensation agree (perhaps not exactly) with the laws of muscular irritability. Hence study of the laws of muscular contraction is the best introduction to physiological psychology. "Emotions" are "sensitive instincts (as distinguished from "motor instincts") with consciousness". The will is essentially a "force of inhibition," which may be exercised either by an "idea" or a "reflex" in a struggle against others. When the struggle between ideas is not on too unequal terms, we have the illusion of free-will. "Attention," "the best-defined form of will," is "an apparatus of excitability that reinforces images". Finally, "intelligence" is "an explosive mechanism with consciousness and memory"; for the essential character of organisms, that becomes more and more manifest as we ascend the zoological scale, is the power, which explosive substances also possess, of setting free large amounts of energy in response to a slight initial change; and this character is most of all manifest in the phenomena of intelligence, these being organically the highest.

L'ancienne et la nouvelle Philosophie. Essai sur les Lois générales du Développement de la Philosophie. Par E. DE ROBERTY. Paris: F. Alcan, 1887. Pp. vi, 364.

This volume is the first part of a work which, as projected by the author, will consist of six similar parts. His system may be described as a modified Positivism. The object of his first volume is to study the philosophy of the past and present as "a social fact," necessary in a certain stage of evolution, but destined to give place to the synthesis of the sciences which is to be the philosophy of the future. He accepts Comte's law of the three states, but only as an empirical formula deducible from more fundamental laws, *viz.*, "the law of the three types of metaphysics" and "the law of correlation between science and philosophy". Theology and metaphysics alike are hypothetical theories of the universe constructed in the absence of a sufficient basis of positive science; theology being essentially an inferior and popularised form of philosophy, existing in general side by side with metaphysics. Metaphysical hypotheses are of three types—Materialistic, Idealistic and Sensualistic. Every metaphysical hypothesis is an attempt to explain the universe in terms of the phenomena that form the subject-matter of one particular group of sciences. Thus the materialist explains all phenomena by reference to the laws of inorganic nature, while the idealist explains them all by reference to the higher psychical and social phenomena. These two forms of metaphysics are contemporaneous in origin and continue to exist side by side. Materialism is a kind of premature positivism. Idealism has the characters of a reaction and tends to attach

itself to theology. Sensualistic philosophy is chronologically later than the two others. It has the same relation to the biological sciences that the other forms of metaphysics have respectively to the sciences of inorganic nature and to the social sciences. Though sometimes brought into alliance with materialism (as by Hobbes and by the French Sensationalists of the 18th century) and sometimes with idealism (as by Berkeley), it is essentially a distinct type of metaphysics, having for the ultimate terms of its ontology "sensations"—that is, those psychical phenomena of which the biological conditions are first discovered—and the "representations" that result from them. What determines the character assumed by each metaphysical doctrine in every age is the state of the positive sciences in that age. This is the "law of correlation between science and philosophy". In general no affiliation of philosophies to one another is to be attempted. They depend, not on the previous state of philosophy, but on contemporary social conditions; the dominant condition being the state of the positive sciences. The "metaphysical stage" of philosophy is characterised by its "false independence" of the sciences. The positive sciences, on the other hand, are uninfluenced, or only influenced to their injury, by metaphysical doctrines. Each positive science depends for its development on the antecedent sciences, as philosophy depends on them all. The scientific philosophy of the future will resemble the philosophies of the past in being a "conception of the universe". Its difference from them will consist in this, that it will not be hypothetical,—hypotheses having their place in special science where they can be verified, not in philosophy where they are assumed simply because knowledge has not yet become scientific,—but will be a synthesis of all the general results of the sciences, including the as yet rudimentary group of the psychical and social sciences. Positivism may be regarded as its "anticipation".

Essai sur le Libre Arbitre, sa Théorie et son Histoire. Par GEORGE L. FONSE-
GRIVE, Professeur agrégé de Philosophie au Lycée de Bordeaux.
Ouvrage couronné par l'Académie des Sciences Morales et Politiques.
Paris : F. Alcan, 1887. Pp. 592.

This is a history of the question of free-will, followed by a theory, founded on historical criticism, of the relations of freedom and necessity. The history is treated in three books, dealing respectively with "Pagan Thought," "Christian Theology" and "Modern Philosophy". The theoretical part, which is rather shorter than the historical part, is again divided into three books,—entitled "Criticism," "The Thesis" and "The Consequences". The historical account of doctrines is extremely good and impartial, and is full of interest of detail. The same may be said of the critical part. The theological doctrines in particular, in which the author has taken special interest, are treated in such a way as to bring out exactly their philosophical bearing. All that can be attempted here is to give a summary of the author's positive results. The opposition of necessity and freedom, in the shape finally given to it by pagan philosophy, he finds to be : "How can the free-will of man be reconciled with the order established by Providence?" This form of the opposition had only been arrived at after a long development from the doctrine of an absolute fate or necessity, which was common to primitive Greek religion and to early philosophy. The place of freedom in the world was first clearly marked out by Aristotle, who recognised the element of contingency in that which depends on man,—τὸ ἐφ' ημῖν : affirming that man is irresistibly attracted towards the good, but allowing him at the same time the power of choosing freely among the means to good. Opposite positions still continued to be taken ; but, as the result of the development from Socrates, the "necessity"

of the determinist schools was no longer a material necessity but a rational order. Christianity was on the whole more favourable than paganism to the doctrine of free-will. This is explained partly by its relation to the Jewish law, which, being imperative, supposes the power of choice in man ; partly by the character of the Christian doctrine of providence, its substitution of " love " for " pure reason " as the dominant conception. There are in all, it is concluded, five possible positions ; and, historically, all these have been held. First there are "the thesis" and "the antithesis," the doctrines of "absolute determinism" (held by the Stoics, Luther and Calvin, &c.) and of "absolute indeterminism" (held by the Epicureans, Pelagius, &c.). Then there is the denial of the possibility of a synthesis. This is the position of some modern men of science, such as Du Bois-Reymond, as well as of some Catholic doctors, such as Bossuet, who insists that we must keep hold of "both ends of the chain"—human freedom and divine necessity—without any attempt to join them. Fourth, there is the "negative synthesis" of the English empirical school, represented by Hume and Mill, who try to get rid of the notions both of free-will and necessity, substituting that of invariable sequence within the limits of observation, and applying it to material and mental phenomena alike. Lastly, there is "the true synthesis," which consists in the denial (permitted by logic) of the two contraries of absolute determinism and absolute indeterminism, together with the affirmation of the "subalternate" propositions, "Something is necessary," "Something is free". The author's method of arriving at this synthesis is first to show, by a criticism of the doctrine of "absolute necessity," that it cannot be proved either on grounds of physical science, of psychology or of metaphysics ; then to trace it to its origin in a certain "logical vice"—the tendency of the mind to suppress variety in the search for unity ; and then to show, on the other side, that the doctrine of "absolute indeterminism" has its origin in the same logical vice as the doctrine of absolute determinism. The refutation of both these doctrines leaves the affirmation of a limited freedom as the only one logically possible. Free-will, thus shown to be open to no logical objection, is to be affirmed on moral grounds. It is definable as "the power in virtue of which man can choose between two contrary actions without being determined by any necessity" ; and the notion of "imprevisibility" is to be asserted, without qualification, as a part of its meaning. The author admits that it is inconsistent with the acceptance of the conservation of energy as "an absolute law, without restriction". In reality, however, this, like all scientific laws, is only "a relative, experimental law," not "absolutely exact," but "nearly and sensibly certain". "It is with a leaden, not with an iron, rule that the plan of things has been traced". In some decisions of the will there is a real indetermination of motives, and the predominance is given to one side by an act of free-will, which must be assumed to proceed from the immaterial soul and to introduce a new force into the world (or to destroy an existing force). Spiritualism, therefore, is the only metaphysical doctrine consistent with the admission of free-will. The decision is made by free-will when there is a conflict between the ideas of "sensible" and "intelligible" or "universal" good ; the idea of "universal good" being formed by "the activity of reason," without material organ. The mode of operation of free-will is, by suppressing the inhibition of one motor tendency, to set another tendency free. In his last book, the author contends that the ethical, political and aesthetic consequences of the doctrine of free-will are preferable to those of determinism. It is more favourable, in particular, to the admission of inviolable personal rights. "La seule différence, mais elle est capitale, qui se trouve dans les conséquences sociales qu'on peut logiquement déduire du déterminisme et du libre arbitre, c'est que, seule, la croyance au libre arbitre et à la valeur morale que le monde

acquiert par lui, permet d'opposer à la loi civile une barrière juridique au seuil de chaque conscience individuelle" (p. 553). This seems a little inconsistent with what is said earlier (with special reference to the free-will doctrines of Catholicism and the necessitarianism of the Reformers):—"La nécessité d'une autorité est la conséquence de la croyance au libre arbitre ; la suppression de l'autorité extérieure entraîne comme contre-coup, pour éviter l'anarchie qui menace, la destruction de la croyance au libre arbitre" (p. 132).

U. VAN ENDE. *Histoire Naturelle de la Croyance.* Première Partie. L'Animal. Paris : F. Alcan, 1887. Pp. xi, 320.

This is the first part of a projected work on the origin of mythology and the religious sentiment. Its purpose is to show that "animism"—by which is meant the conception of all things, without distinction of living and not-living, as animated—is "the complex and secondary product of a period already speculative". Man has no primitive impulse to "vitalise" nature. It is in states of consciousness older than animism that religion has its origin. "The animist doctrine"—that is, the doctrine that regards "animism" as the earliest belief of men about natural things—"gives no account of the affective element, which is the true substance of religions, from the simplest beliefs to the most abstract worship". Animism is not the source of the different currents of religious thought, but is their collective result. What may be inferred from observation of children, who do not really confuse the not-living with the living, and of savages, who regard some natural objects as alive but not all, is confirmed by study of the minds of animals. The intellectual currents that have become the source of mythology, as of all human beliefs, "exist already in animality". "The myths of primitive man are only a more advanced and more precise form of their development." Accordingly, the bulk of the present volume is a study of animal psychology, with special reference to the distinction of the living and the not-living and the psychical elements in which religion and mythology, when the level of primitive human intelligence has been attained, may be supposed to have their origin. The higher animals, it is found, as well as man, at first distinguish clearly between that which is alive and that which is not; but, under the influence of the motive of self-preservation, everything living, being a possible source of danger, comes to be attended to more closely than things without life. Thus life comes to be thought of as the only source of motion; and the way is now prepared for the confusion of the not-living with the living. This confusion is not fully established till the myth-making stage; but already in animals the first indications of it may be observed. The cause of the extraordinary development in man of "mythogenesis," as of other faculties, was "an external impulse," "a radical change in the conditions of existence of primitive man". To trace the effects of this change will be the object of the subsequent part of the work.

Journal d'un Philosophe. Par LUCIEN ARRÉAT. Paris : F. Alcan, 1887. Pp. 303.

In the form of an imaginary correspondence between two friends, to which a certain unity is given by a "romance" affecting one of them, the author has written a series of reflections on current topics of philosophy, literary and artistic criticism, &c. A large amount of recent psychological and philosophical work is lightly touched upon, and the whole forms an interesting view of contemporary thought, as well as a contribution to it.

Philosophies de la Nature. Bacon—Boyle—Toland—Buffon. Par NOURRISSON, Membre de l' Institut. Paris : Perrin, 1887. Pp. cxix., 263.

The author's purpose is to establish "that there is no solid philosophy

of nature which is not founded on the ideas of the soul and of God," first by a general historical sketch of philosophies of nature (pp. v.-cix.), then by a series of "monographs" which are to serve as examples to justify the same conclusions (pp. 1-263, "Des idées d'esprit et de matière dans la philosophie de Bacon," "Robert Boyle et l'idée de nature," "Toland, *Pantheisticon*," "La philosophie de Buffon"). Antiquity, he finds, was dominated by the conception *ex nihilo nihil*. The charm is broken, and the true doctrine of creation and the ideas connected with it are made dominant by Christianity. With the revolt of the Renaissance, "Naturalism" reappears. Descartes and the French philosophy of the 17th century again restore Spiritualism, which again disappears in the renewed revolt (inspired by English philosophy) of the 18th century. This time Naturalism displays its frightful practical consequences in the French Revolution. After "the unbridled Materialism of a second Renaissance," the 19th century, at its dawn, was to see again "a philosophy that should take care to harmonise itself with the necessities of practice, and should not disavow the fundamental notions of common sense". In Evolutionism—the Naturalism of the present day—philosophy has again fallen under "the magical and deplorable empire of words". For what are Nature, Evolution and Matter? *Sunt verba et voces* (p. xv.). Among the "monographs," the analysis of Toland's *Pantheisticon* (pp. 85-196) is not without interest. The following passage, however, with some historical basis, reads rather curiously:—"Toland, qui, dans la rédaction de son *Pantheisticon*, s'était certainement inspiré des traditions maçonniques fort anciennes en Angleterre ; Toland devait aussi, par cet ouvrage même, contribuer sans doute à la diffusion de la Franc-Maçonnerie, qu'en 1725 introduisit en France lord Dervent-Waters (*sic*). Et en effet Panthéistes et Francs-Maçons ne sont pas sans se rapprocher par plus d'une affinité" (p. 172). Toland's controversial style, according to the author—who qualifies his ideas as "chimères," "politically intolerable," "pernicious and miserable diversions"—"va jusqu'à l'invective". M. Nourrisson is, he tells us, "de ceux qui exigent qu'on attache un sens précis aux termes qu'on emploie ; qui veulent que les idées que ces mots expriment soient claires ; qui surtout demandent aux faits, dans tout ordre de connaissances, la vérification des théories" (Preface, p. i.). After this claim to accuracy, it is disappointing to find Kepler's laws, Galileo's observations with the telescope and Harvey's discovery of the circulation of the blood all assigned to the 16th century (p. 4).

L'Education du Caractère. Par ALEXANDRE MARTIN, Chargé du Cours de Pédagogie à la Faculté des Lettres de Nancy. Paris : Hachette, 1887. Pp. 377.

By "character" the author understands "the sum of the qualities that are presented by two out of the three great faculties of the human soul, the sensibility and the will". Modern education, he holds, assigns too much importance to the intelligence and too little to the character ; and one purpose of his present "course of pedagogy" is to make practical suggestions for the improvement of moral education in the home and in the school. Two chapters (iii., iv.) are devoted to consideration of the influence of heredity and of physical temperament on the character ; but first M. Martin compares the optimistic theory of Rousseau and the theory of "theological pessimism" as to the natural character of children, deciding that the last is nearer the truth. Children have no natural morality ; "the conception of duty as a categorical imperative" being for a long time above their reason. "The natural inclinations of childhood" are divided into three classes : "those that are indifferent from the point of view of

morality ; those that are contrary to morality ; those that morality approves because it finds in them auxiliaries". The character that conduces to success in the struggle for existence, and the character that conforms to the higher moral ideal, are in many respects different. Which character, then, shall parents and teachers strive to produce ? This question, it is suggested, may be ultimately insoluble without the assumption of a supernatural order ; but in practice it is partially resolved by the observation that the power of conquering the inclinations, of putting forth energy by an effort of "free-will," is common to both characters. This power, therefore, is to be especially cultivated. The habit of obedience is favourable to the development of energy of will ; but authority must not be all-embracing or too minute, and the space within which the free-will of the scholar can exercise itself should be gradually extended with advancing age.

Science et Psychologie. Nouvelles Œuvres inédites de MAINE DE BIRAN. Publiées avec une Introduction par ALEXIS BERTRAND, Professeur de Philosophie à la Faculté des Lettres de Lyon. Paris : E. Leroux, 1887. Pp. xxxiv., 352.

All those who are of opinion that French thinking never reached a higher level than in Maine de Biran will welcome this important addition to the list of his published works. It consists of six pieces under the following titles : (1) *Rapports de l'Idéologie et des Mathématiques*, pp. 1-22 ; (2) *Observations sur le Système de Gall*, pp. 23-71 ; (3) *Commentaire sur les Méditations de Descartes*, pp. 73-125 ; (4) *Rapports des Sciences Naturelles avec la Psychologie*, pp. 127-288 ; (5) *Notes sur l'Abbé de Lignac*, pp. 289-317 ; (6) *Notes sur l'Idéologie de M. de Tracy*, pp. 319-50. The first is from the period when Maine de Biran still belonged to the ideological school ; the others, falling within 1808-15, were written in his second period—of independent philosophical thought—before he passed into the mystic vein of his last years. It was the *Commentary on Descartes*, which Prof. Bertrand, the editor, wished to study, that first made him apply to M. E. Naville of Geneva, the possessor of Maine de Biran's MSS. M. Naville, who issued a full account of these in 1851, and who himself published in 1859 the three volumes that so effectively supplemented Cousin's four from the year 1834 (ten years after the philosopher's death), gave willing access to the whole mass of the unpublished writings, and it is not without the help of his experience and constant guidance that the present selection has been made. It comes forth as vol. ii. of the "Library of the Faculty of Letters of Lyons," a series of independent volumes now substituted for an earlier yearly publication of papers in history, literature and philosophy. Still more important than the *Commentary on the Meditations* (i., ii., iv.), though that is of great value both intrinsically and for the understanding of Maine de Biran's own development towards his latest phase of thought, is the fourth piece dealing with the relation of Psychology to the Natural Sciences. It is a mere fragment, but has not less interest now than when it was written as a plea for the independent scientific character of pure psychology, and it contains a scientific doctrine of reason and belief that is missed in the *Essai sur les fondements de la Psychologie*, the most finished work of Maine de Biran's pen (issued by M. Naville in 1859). Its relation to the *Essai* is very hard to determine. The conclusion to which M. Naville has finally come is that it dates from 1813, after the *Essai* was practically completed, but, remaining itself incomplete, was passed over when, after a time of political distraction, the *Essai* was taken up again and finally disposed of towards 1815. M. Bertrand had intended to include in the volume the correspondence of Maine de Biran with Cabanis, Ampère, Destutt de Tracy and others, but this has had to be kept back for the present.

of nature which is not founded on the ideas of the soul and of God," first by a general historical sketch of philosophies of nature (pp. v.-cix.), then by a series of "monographs" which are to serve as examples to justify the same conclusions (pp. 1-263, "Des idées d'esprit et de matière dans la philosophie de Bacon," "Robert Boyle et l'idée de nature," "Toland, *Pantheisticon*," "La philosophie de Buffon"). Antiquity, he finds, was dominated by the conception *ex nihilo nihil*. The charm is broken, and the true doctrine of creation and the ideas connected with it are made dominant by Christianity. With the revolt of the Renaissance, "Naturalism" reappears. Descartes and the French philosophy of the 17th century again restore Spiritualism, which again disappears in the renewed revolt (inspired by English philosophy) of the 18th century. This time Naturalism displays its frightful practical consequences in the French Revolution. After "the unbridled Materialism of a second Renaissance," the 19th century, at its dawn, was to see again "a philosophy that should take care to harmonise itself with the necessities of practice, and should not disavow the fundamental notions of common sense". In Evolutionism—the Naturalism of the present day—philosophy has again fallen under "the magical and deplorable empire of words". For what are Nature, Evolution and Matter? *Sunt verba et voces* (p. xv.). Among the "monographs," the analysis of Toland's *Pantheisticon* (pp. 85-196) is not without interest. The following passage, however, with some historical basis, reads rather curiously:—"Toland, qui, dans la rédaction de son *Pantheisticon*, s'était certainement inspiré des traditions maçonniques fort anciennes en Angleterre ; Toland devait aussi, par cet ouvrage même, contribuer sans doute à la diffusion de la Franc-Maçonnerie, qu'en 1725 introduisit en France lord Dervent-Waters (*sic*). Et en effet Panthéistes et Francs-Maçons ne sont pas sans se rapprocher par plus d'une affinité" (p. 172). Toland's controversial style, according to the author—who qualifies his ideas as "chimaeras," "politically intolerable," "pernicious and miserable diversions"—"va jusqu'à l'invective"; M. Nourrisson is, he tells us, "de ceux qui exigent qu'on attache un sens précis aux termes qu'on emploie ; qui veulent que les idées que ces mots expriment soient claires ; qui surtout demandent aux faits, dans tout ordre de connaissances, la vérification des théories" (Preface, p. i.). After this claim to accuracy, it is disappointing to find Kepler's laws, Galileo's observations with the telescope and Harvey's discovery of the circulation of the blood all assigned to the 16th century (p. 4).

L'Education du Caractère. Par ALEXANDRE MARTIN, Chargé du Cours de Pédagogie à la Faculté des Lettres de Nancy. Paris : Hachette, 1887. Pp. 377.

By "character" the author understands "the sum of the qualities that are presented by two out of the three great faculties of the human soul, the sensibility and the will". Modern education, he holds, assigns too much importance to the intelligence and too little to the character; and one purpose of his present "course of pedagogy" is to make practical suggestions for the improvement of moral education in the home and in the school. Two chapters (iii., iv.) are devoted to consideration of the influence of heredity and of physical temperament on the character; but first M. Martin compares the optimistic theory of Rousseau and the theory of "theological pessimism" as to the natural character of children, deciding that the last is nearer the truth. Children have no natural morality; "the conception of duty as a categorical imperative" being for a long time above their reason. "The natural inclinations of childhood" are divided into three classes: "those that are indifferent from the point of view of

morality ; those that are contrary to morality ; those that morality approves because it finds in them auxiliaries". The character that conduces to success in the struggle for existence, and the character that conforms to the higher moral ideal, are in many respects different. Which character, then, shall parents and teachers strive to produce ? This question, it is suggested, may be ultimately insoluble without the assumption of a supernatural order ; but in practice it is partially resolved by the observation that the power of conquering the inclinations, of putting forth energy by an effort of "free-will," is common to both characters. This power, therefore, is to be especially cultivated. The habit of obedience is favourable to the development of energy of will ; but authority must not be all-embracing or too minute, and the space within which the free-will of the scholar can exercise itself should be gradually extended with advancing age.

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La Vie des Sociétés. Par le Dr. A. BORDIER, Professeur à l'École d'Anthropologie de Paris : C. Reinwald, 1887. Pp. xv., 359.

The author's aim is to study "the natural history of societies," in the manner in which the growth of a plant or animal is studied. The "physiological laws of the social organism" are to be deduced from the appropriate "documents"; the individual being "considered as a simple anatomical element of the social body and studied successively in the modifications which the number of the similar elements, their structure, their nutrition, their reproduction, their riches or their poverty may cause that organism to undergo". The social organism is then to be studied in its evolution and in the various diseases to which it is subject. Lastly, the right methods of "social hygiene"—or legislation and education—are to be deduced. The "documents" which the author makes his basis are the results obtained by anthropologists and statisticians. These are set forth and discussed in accordance with his biological terminology. By the term "hygiene," he intends to signify the substitution of methods involving as little interference as possible with individual freedom, for the more violent methods of social "therapeutics". This he regards as a reform in politics and education corresponding to the modern reform in medical treatment. The philosophical writers by whom he has been most influenced are Buckle and Mr. H. Spencer.

Opere Filosofiche di ROBERTO ARDIGÒ. IV. *Sociologia. Il Compito della Filosofia e la sua Perennità. Il Fatto Psicologico della Percezione.* Padova : A. Draghi, 1886. Pp. 502.

The first three volumes of Prof. Ardigò's collected works were noticed in MIND xi. 291. Of the present volume the largest and most important work is the *Sociology* (pp. 11-252). It may be regarded as a continuation of the *Ethics* of vol. iii. Ethics, in the author's view, is a branch of the science called by Aristotle "Politics," and now called "Sociology" (p. 51). If a distinction between Politics and Sociology be maintained, Prof. Ardigò's work is rather political than sociological; his theory of "the natural formation of justice" being developed not simply with the purpose of historical explanation, but with a view to the construction of a doctrine of political rights and duties. For the explanation of "the natural formation of justice," the general principle laid down is, "No justice without human society" (p. 96). The idea of justice is formed from the experience of a conflict of powers. It becomes determinate in the form of legal duties and rights when the separate powers are brought into equilibrium by a central governing power. To make the formation of such a power conceivable, we must suppose in individuals an impulse, at first indeterminate, towards a social ideal. This "individual consciousness of social ideality" is in its nature "anti-egoistic". When a system of legal rights and duties has been formed by the action of the central power, there appears a conflict between legal right and what is called "natural right". The consciousness of "natural rights" is a consciousness of "social idealities" not yet embodied in positive law. It is this, and not the rebellion of egoistic impulses, that is the motive force of revolutions. Ultimately "positive law" is determined and justified by "natural law," or the law of the ideal state. "Anti-egoistic social ideality," when it has become distinct, is reinforced by the motives that at first gave its strength to egoism. The idea of moral justice, as it grows, is transferred from the act to the intention. The conception of acts of "charity," "beneficence" or "philanthropy," which go beyond what is strictly due, is formed. In the case of acts of strict justice, also, the consciousness of the "sanction," that is, of the force exerted by society to compel the observance of what is just, tends to disappear.

Ideas of "virtue" and "merit" then arise, which imply spontaneity of action and differences between different persons, as regards the degree of spontaneity; the virtue or merit of an action or a character being greater in proportion as there is less direct consciousness of any external sanction. Before the ideas of "positive law," "natural law," "justice," &c., arise in their distinction, there is a general notion of social "fitness" (*convenienza*); and there always remain, outside the kinds of conduct regulated by the central power, other kinds of conduct, to which not the action of the central power, but only a less definite form of the social sanction is applicable. The requirements of the ideal of human society, expressed in terms of the analogy between the social and the biological organism, are: (1) Autonomy of the parts; (2) Prevention of mutual violence; (3) Distinct constitution of the central power; (4) Its constitution by selection of the best, in dependence on the will of the parts, in virtue of their social idealities, and to the end of the protection of the co-ordinated autonomies of the society; (5) Just and stable organisation and subordination of the parts corresponding to the stable and just organisation and efficacy of action of the power (p. 38). To every right corresponds a duty; but every right is not at the same time a duty (pp. 130-1). The right to carry into effect an impulse towards the social ideal is at the same time a duty for the person exercising the right, while the right to exercise egoistic activities is in itself simply a right, though it may imply the duty of other persons not to interfere. Rights at once constitute the social organism and are determined by it (p. 227). The State has for its functions—"the protection of the rights of all," "the acquisition of prosperity," "moral improvement" (p. 249). Thus conceived, it is "the pure and complete realisation of social ideality, or of the principle of anti-egoistic good, of moral good; in a word, of good for the sake of good". From this outline of some of its leading positions the importance of Prof. Ardigo's ethico-political work will be evident. As some account of his psychological and general philosophical point of view has already been given in MIND, less need be said here of the two remaining works of the present volume. It may suffice to mention that the last, on *The Psychological Fact of Perception*, starts from a critical examination of Prof. Sergi's *Physiological Theory of Perception* (noticed in MIND vi. 154), and that the author's own doctrine is that "simple observation . . . gives only pure sensation; for this to become a perception, it must be conjoined with experiment" (p. 345).

FRANCESCO DE SARLO. *Studi sul Darwinismo*. Pp. 186. Also *I Sogni: Saggio psicologico*. Pp. 32. Napoli: A. Tocco & Co., 1887.

The greater part (pp. 5-116) of the first of these pieces is devoted to an exposition of the Darwinian theory of evolution by natural selection and a defence of it against objectors; the author then discusses "Problems started by Darwinism," "Darwinism and Philosophy," "Social Darwinism," "Linguistic Darwinism," "Darwinism and Chemistry," "Darwinism and Astronomy". With all its importance, "Darwinism is not the Alpha and Omega of science," and "much less can it be the foundation of a philosophy. Philosophy and Darwinism are ideas that are perfectly separate but do not oppose one another. Not so Darwinism and Theology; for dogma and research, science and faith, are ideas that absolutely exclude one another." There can be no "social Darwinism". Social progress is not essentially the result of a struggle, but of intelligence; the various forms of social rivalry being "simple stimuli". Physical, chemical and astronomical phenomena are not made clearer by attempts to explain them as cases of natural selection. They are the expression of more general laws, into which the idea of a utility to be served does not enter. It is incorrect, for

example, to speak of a "struggle for existence in heaven"; for there is nothing observable in the positions of the heavenly bodies of the nature of an end to which some are conformable and others not. The short study of Dreams, by the same author, starts from the theory of Delboeuf that all past experience is preserved, and that everything in dreams can be explained by the reappearance of memories of experiences forgotten in waking life. This theory, however, is insufficient, the author contends, unless a reason can be given why particular memories are selected rather than others. He finds the required explanation in the suppression of volition and the predominance of emotion, which, in dreams, acts as "the condenser of experiences". Dreams are "the natural lyricism of life". From this follows the prophetic character of some dreams and presentiments. The disturbing action of the self-interested motives characteristic of volition being removed, ideas of desired or dreaded events are free to group themselves in their true relations. The apparent fulfilment of a dream or presentiment may also in some cases be an illusion. For it is a law of emotion that heightened and depressed states of feeling tend to alternate; and thus a dream may be expressive of the mood that contrasts with that which has been experienced immediately before it in waking life, and the events occurring after the dream may be seen through the medium of this (still continued) "consecutive emotion".

Prof. GIOVANNI CESCA. *La Teorica della Conoscenza nella Filosofia Greca*. Verona-Padova : Drucker e Tedeschi, 1887. Pp. 66.

The general conclusion of this history of the theory of knowledge in Greek philosophy is that on the whole no important results were attained either as regards the nature, origin or validity of knowledge, because theory of knowledge was not studied "*ex professo* and independently," but continued to be dependent on and limited by metaphysical and ethical theories. As regards the question of the origin of knowledge, the author makes an exception in favour of the Stoics, who, he holds, combined the truth that is in sensationalism with the truth that is in nativism, by their acceptance of an empiricism modified by the recognition that perception is not a mere affection of sense caused by external objects, but involves an activity of the mind. As regards the nature and validity of knowledge, Greek philosophy in general remained essentially dogmatic, in the spirit of the early physical schools; while its sceptical doctrines ended in absolute nihilism. An exception to this judgment is made in favour of the "phenomenalism" of Ænesidemus, who had the merit of seeing that knowledge is not adequate to the object, but is relative to the knowing subject, "so that we know only our representations, that is, phenomena, and never their substratum, that is, things-in-themselves". "This doctrine, however, is entirely isolated and was not recognised in its importance and extension, but only served a practical aim, so that, in spite of the just conceptions of the Stoics and of Ænesidemus, we may conclude that Greek philosophy in general neither succeeded in making an important and valid contribution to the formation of Epistemology, nor in explaining the nature, origin and validity of knowledge."

I Problemi della Filosofia della Storia. Prelezione letta nella Università di Roma, il 28 Febbraio, 1887. Dal Prof. A. LABRIOLA. Roma : Loescher, 1887. Pp. 45.

In this inaugural lecture, delivered by him on assuming temporarily the post of Prof. Barzellotti, now transferred to another university, the author states his general view of the Problems of Philosophy of History. He insists, against those who wish to consider history as one of the natural

sciences, on the distinctions of its subject-matter ; pointing out, for example, the impossibility of inferring from the physical characters, such as the form of the skulls of the Mediterranean races, the character of a product such as Greek art (pp. 20-1). Philosophy, he says, has the right to protest against the exaggerations of a doctrine that regards history as determined simply by external needs, just as it had the right to protest against the exaggerations of the opposite doctrine of a spirit acting by mere internal impulse and making its way unaffected by obstacles (pp. 41-2). He criticises the ideas of progress and of the unity of history, and contends for an "epigenetic" as distinguished from an evolutionary view of the origins of civilisation.

Ueber das Schöne. Analytische und historisch-kritische Untersuchungen.

Von Dr. JULIUS BERGMANN, ord. Professor der Philosophie an der Universität zu Marburg. Berlin : E. S. Mittler und Sohn, 1887. Pp. 201.

Before proceeding to the historico-critical studies that form the greater part of this volume, the author defines with extreme care the nature of aesthetic emotion. His principal conclusions are these. A pleasure, to be aesthetic, must be a pleasure felt in mere contemplation. What is contemplated may be either a perception, or an imagination, or a state of subjective feeling aroused by a perception or imagination. A beautiful object may have a worth for feeling independent of mere contemplation ; in order to recognise its beauty, an intellectual process may be necessary : but the aesthetic pleasure is something distinct, though perhaps not separable, from any other value of the object for feeling ; and the subsidiary intellectual process is not to be regarded as itself aesthetic, because it is necessary to the existence of the aesthetic pleasure. Beauty is subjective ; that is, a thing or a phenomenon is beautiful for a subject contemplating it, and not in itself apart from every possible subject. From the doctrine that beauty is something residing in an absolute object—the doctrine of the "speculative" or "cosmological" systems of post-Kantian aesthetics—is to be distinguished Herbart's doctrine of the "objectivity" of beauty, which is a psychological theory, not inconsistent with the doctrine of its "subjectivity" in the author's sense. Such a view, and in particular the doctrine that beauty is subjective, the author regards as the result finally attained by the movement of aesthetics in Germany since Kant. The cosmological point of view has now, as he puts it, been replaced by the psychological point of view, which may henceforth be regarded as a common possession. The problem of aesthetics is recognised as being to determine the nature and conditions of aesthetic enjoyment, not the nature of the beautiful as it is in itself. The principal aesthetic writers discussed in the historical part of the book are Kant, Herbart and Schopenhauer. The critical examination of their conclusions is made the basis of further analysis.

Die drei metaphysischen Fragen nach Immanuel Kant's Prolegomena zu einer jeden künftigen Metaphysik, die als Wissenschaft wird auftreten können beantwortet von F. V. VON WASSERSCHLEBEN. Berlin : C. Duncker (C. Heymons), 1887. Pp. vii., 115.

The author has proposed to himself to construct a metaphysics in the sense of Kant's *Prolegomena zu einer jeden künftigen Metaphysik*, on the basis of modern science. The writers from whom he has received most influence are, as he mentions, F. A. Lange and Prof. Wundt. He proceeds to ask the answer, on scientific grounds, to each of Kant's three questions ; taking the three "Ideas," the Psychological, the Cosmological and the Theological, or Immortality, Freedom, God, in the order given. "The

original ground of all things," according to modern science, is found to be "force". Matter and consciousness are the same in essence, both being alike manifestations of force; but the law of psychical force is different from the law of physical force, being (as stated by Prof. Wundt) a law of constant increase instead of a law of equivalence. Human consciousness is the result of a process of development out of matter. "The soul is nothing substantial or enduring, and the identity of the Ego is only an apparent identity." What is permanent is the structure of the organism. On the ground of science, therefore, personal immortality must be denied. The antinomies that spring from the Cosmological Idea are due to neglect of the distinction between "material" and "psychical" force and (consequently) causality. Man, as regards his body, is subject to natural laws; but through the presence in him of spirit he is a cause of the beginning of motion, and is free in so far as he is not under the dominion of impulses from his lower nature. The human will is determined by the divine will; in which alone necessity coincides with freedom. Passing to the Theological Idea, the author finds that the conception of a "world-consciousness" is a necessary conception. For "the history of nature is the history of the progressive victory of spirit over matter"; and this supposes a directing intelligence. A complete world-consciousness, however, can only be posited at the beginning and at the end of the world-process. That the motion of matter will terminate and the world-process have an absolute end, follows from the law of the degradation of all forms of energy into heat. On the other hand, "everything living springs from life; the inorganic springs from the organic and has been formed by vital activity". Matter is the "bound," spirit the "free," force. If, then, we proceed from consciousness as the more certain, we must assume that the free world-consciousness has bound itself by laws willed by itself. Force, therefore, originally present as world-consciousness, transformed itself into the unconscious or matter for the sake of an end proposed to itself, and will again emerge from the world-process as world-consciousness. "In the beginning was God, and nothing outside Him. God has transformed Himself into the world, and the world will again return to itself in God." "The world-process is a struggle of the unconscious with itself according to natural laws willed by God before the beginning of Creation." The purpose of the transformation of the unity of the world-consciousness into separate single beings by the intermediate stage of the unconscious or matter, was an intensification of mental force. The only other purpose of the world-process that can be known by us is the storing up of memories of a world-history for the sake of the future complete world-consciousness. For although individual memory disappears at death, "the unconscious memory of Nature is true and ineradicable"; and the memories of all the states of consciousness of all individuals are preserved, to reappear at "the new birth of the spirit," when all shall again "live in God". Ethically, all actions are to be estimated by their relation to the world-process. To promote this is "the divine command," which is identical with "the well-understood interest of man". "Sin is what opposes and prolongs the world-process."

Abendröte. Psychologische Betrachtungen. Von PAUL LANZKY. Berlin : C. Duncker (C. Heymons), 1887. Pp. 134.

This book is composed of a series of detached "thoughts," arranged under twelve heads, on life, philosophy and art. It purports to be written by a once pessimistic thinker, who has become reconciled to human life by retiring into solitude, yet without wishing again to leave his solitude; for by withdrawal from the world he has both recovered from misanthropy

and learnt to be self-sufficing. The single reflections are often very suggestive, and have always a stamp of individuality. So far as the book conveys a general view of life, it is summed up in the motto from Montaigne which is placed on the title-page:—"La plus grande chose du monde, c'est de savoir estre à soi," and in a "thought" of Leopardi (from whom the author has taken the motto of one of his twelve chapters) :—"He who communicates little with men is rarely a misanthrope. True misanthropes are not found in solitude, but in the world. . . . And if one who is such retires from society, he loses in retirement his misanthropy" (*Pensieri*, lxxxix.).

Die Willensfreiheit des Menschen. Von Fr. J. MACH, k.k. Professor am Staats-Obergymnasium in Saaz. Paderborn u. Münster : F. Schöningh, 1887. Pp. ix., 274.

The author seeks to establish the doctrine of free-will, not by deduction from principles, but "on the real basis of concrete inductive facts". Thus "science and life, theory and practice, psychology and practical moral interests" are to be reconciled, and the right of punishment exercised by society and the State to be justified. From the proof, to be given afterwards, that animals have no free-will, the falsehood of Materialism and of the philosophy of Schopenhauer is to be inferred. The distinction of kind between men and animals will thus be maintained ; and the proof of the free-will of man will gain its full evidence. The experience on which the doctrine of free-will is to be based is "internal experience" ; but first the author sets out to refute the doctrines he regards as false. His preliminary positions are that "freedom is not absolute indeterminism," and that "freedom is not absolute determinism". He examines at considerable length (pp. 35-111) the various forms of determinism, *viz.* (1) "External determinism" (the theological predestination of Luther, Calvin and Wycliff, and the determinism of Spinoza) ; (2) "Mechanico-physical or materialistic determinism" (Büchner, &c.) ; (3) "Internal or mechanico-psychological determinism" (Leibniz, Herbart) ; (4) "Metaphysical or pantheistic determinism" (Schelling, Hegel, Hartmann). All these doctrines are incompatible with "the feeling of repentance, the fact of conscience, moral responsibility". The true doctrine of freedom is that of "relative indeterminism" or of a limited power of free choice (pp. 112-150). In the remainder of the book, objections are replied to (pp. 150-70), and the positions are defended at length—(1) that "true freedom is moral freedom" (pp. 171-203) ; (2) that "responsibility is a consequence of human freedom" (pp. 204-21) ; (3) that "free-will does not belong to animals, but only instinctive activity" (pp. 222-40). There is an historical appendix (pp. 241-74) tracing the problem of free-will from antiquity to modern times. The true doctrine of free-will, the author contends, first became possible in the Christian era (pp. 249-50) ; and in his historical section, as elsewhere, he is careful to point out that there is no incompatibility between the doctrine of a limited free-will and the Scholastic doctrine, represented above all by Thomas Aquinas, that the will is necessarily determined to strive after "good generally" or "happiness" (pp. 256-7 and 140-4).

Reproduction, Gefühl und Wille. Von Dr. RICHARD VON SCHUBERT-SOLDERN, Privatdozenten der Universität Leipzig. Leipzig : Fues (R. Reisland), 1887. Pp. xv., 135.

The aim of this book, as stated by the author, is to show how "feeling"—that is, "pleasure and pain"—is the determining factor of all thought and action. Like his other works, it has in view "the analysis of the immediately given" ; for this, he holds, must in any case precede metaphy-

sics—if metaphysica be supposed possible. Starting from the distinction arrived at in his *Grundlagen einer Erkenntnisstheorie* (see MIND x. 310) between the point of view of "natural science" and the point of view of "psychology," he shows that as the body is the centre to which everything belonging to the external world or the world of perception appears as in relation, so feeling is the centre for the relations of the internal world or the world of representation. Through the body, itself a group of perceptions, all perceptions are mediately in relation with the internal world, and so with feeling. Feeling, which appears on the one side as determined by reproduction of presentations, on the other side determines it. With feeling, desire and volition are inseparably bound up. The work, accordingly, falls into three divisions, dealing respectively with Reproduction, Feeling and Will, which are subdivided as follows:—Section i. c. 1, "Reproduction," 2, "Association," 3, "Abstraction and Reflection"; Section ii. c. 1, "The Life of Feeling in general," 2, "The Life of Feeling in particular"; Section iii. c. 1, "Necessity," 2, "Wish and Will," 3, "Free-will". Nearly all psychical phenomena, in the author's view, can be partially explained by the recognised laws of association; but associationists have neglected feeling, which, though it does not itself associate ideas but only directs and strengthens associations, is yet of the greatest importance (p. 26). Abstraction, again, cannot be fully explained by resemblance and more frequent repetition in consciousness of certain representations. For complete explanation, it has to be seen that the representations to which the strongest feelings of pleasure and pain are attached come into the foreground, and that thus attention directs itself to these and they are most strongly distinguished. Ultimately, every intellectual as well as every volitional process is to be explained by reference to pleasure or avoidance of pain, which alone has "value". "Necessity" is reduced psychologically to a form of expectation; "physical necessity" being defined as the expectation of future perceptions in accordance with past perceptions, "psychical necessity" as the expectation of future representations and feelings in accordance with the past. In the last chapter the author contends that "freedom of choice," without "freedom of will," is a sufficient basis of moral responsibility.

Geschichte der Ethik. Darstellung der philosophischen Moral-, Staats- und Social-Theorien des Alterthums und der Neuzeit. Von Dr. KARL KÖSTLIN, o.ö. Professor an der Universität Tübingen. Erster Band: Die Ethik des classischen Alterthums. Erste Abtheilung. Tübingen: H. Laupp, 1887. Pp. xii., 493.

This promises to be a very full history of ethical and political theories in ancient and modern times. It is called a "History of Ethics"; but, as the author tells us, he understands by "Ethics" not merely the science of morality, but the whole of practical philosophy, including, in particular, the philosophy of society and the State (p. 6). The present volume takes in the pre-Socratics, the Sophists and Socrates, Plato and the older Academy. The exposition of doctrines is preceded by a general introduction on practical philosophy, its subject-matter, its methods and its divisions (pp. 1-115), and by a special introduction on the character of Greek Ethics and its sources in Greek life (pp. 119-159). The three chief questions that practical philosophy must ask are found to be: (1) What are the ends of human action? (2) What are its laws? (3) What are the conditions of the realisation of human ends and laws? A principal point of the last investigation is to determine the real objective order to be given to the collective life of men in order that the ends and laws of man may be realised. Ancient and modern Ethics are to be specially studied, because

it is only in ancient and modern times that the attempt has been made to work out a practical philosophy on purely philosophical grounds. The Ethics of classical antiquity has permanent interest (1) because, scientifically, it created moral, social and political philosophy, and stated all possible views of the end of life, (2) because of its "ideal direction". Its idealism consists in its telling men to seek as their end both personal perfection and the perfection of the political society in which they live. This idealism, however, has a "naturalistic element"; perfection being held to consist entirely in the unfolding of natural dispositions. The recognition that the highest end of all is conformity to a binding "moral law" is absent. Hence ancient Ethics, in its view of the destination of man, has not attained complete "spirituality". Christianity, deriving the conception of moral law from Judaism, replaced ancient "naturalism" by "spiritualism". In the Middle Ages, spiritualism was exaggerated into a dualism that placed the spirit in antagonism to reality. In modern times, the real regained its rights; and at the same time there has been a constant effort to reconcile ancient naturalism with Christian spiritualism. All the branches of practical philosophy have also been studied more thoroughly and completely, "so that now for the first time a true philosophy of human things, of human interests and human ideals as a whole, has been created".

Ueber die wahren Ursachen. Eine Studie von Dr. S. STRICKER, Universitäts-Professor in Wien. Wien : A. Hölder, 1887. Pp. 60.

This investigation of what is meant by "cause" was started by Hume's doctrine of causality, and proceeds on the basis of the psychological results arrived at by the author in his *Studien über die Bewegungsvorstellungen* (1882), here briefly recapitulated. The perception of motion, he concluded in the former work, cannot have been acquired by the fusion of mere passive sensations, but always depends on a determination of action or incipient action of muscles. In volition, muscular movement follows immediately upon innervation of motor nerves, and is felt as in direct quantitative relation (though not strictly proportional) to the intensity of the felt innervation that precedes it. It is to this type that all motion is primatively referred. External motions, since their perception is involuntary, are referred to a will external to that of the percipient; those that do not proceed from other men or from animals being referred to invisible living beings. For will, physical science substitutes "force," which is merely will depersonalised; and, by a speculative extension of the conception of force, the apparently spontaneous beginnings of action in volition are themselves traced back to pre-existing forces. The search for causes, therefore, is grounded in our internal experience. It is not to be explained, as Hume explains it, by observed customary conjunctions of events in the external world; but is the reference of an event which, as soon as perceived, determines in us motor feelings, to the type of the production of such feelings which exists in ourselves. And in any particular case we seek the true cause of an event either by active experiment or by comparison with previous active experiments of which we possess the results in the form of the "potential knowledge" that constitutes "common-sense": we do not simply call any customary antecedent the "cause" of its consequent. A "true cause" is the "origin" or "source" of matter or motion ("Ursache" = "Ursprung" or "Urquelle"). As the "cause" of any particular portion of matter is that portion of matter pre-existing somewhere else, so the "cause" of the force or motion possessed by any portion of matter is that same quantity of force or motion possessed by some other portion of matter. The law of causality is therefore identical with the "law of conservation" of physics. (The author promises to defend, in a second part of

the Study, his use of the term "force" or "motion" in preference to "work" or "energy".) The character of the law of causality or conservation is that which Kant says would belong to it if drawn from experience; that is to say, it has only "empirical universality" and not "necessity"; although the absence of the character of necessity does not follow, as Kant holds, simply from the experiential origin of the law.

Probleme der Lebensweisheit. Betrachtungen von JÜRGEN BONA MEYER, Zweite Auflage. Berlin : Allgemeiner Verein für deutsche Literatur, 1887. Pp. vi, 369.

This volume opens with a collection of proverbs, of various nations, relating to the training and education of children (i. "Erziehungsweisheit im Sprichwort"). The author then goes on to discuss some of the questions suggested in his opening study; proceeding from discussions of "Play" and of "Natural Disposition and the Choice of a Vocation" to consideration of the differences between Genius and Talent and the training of the Imagination and the Memory. Essays on questions of casuistry and on the different types of moral systems are followed by a series of essays (ix.-xiii.) in which the author opposes the pessimism of Schopenhauer and Hartmann and seeks to substitute for it a moderate optimism, both as regards the individual life and the future of the race.

Die Geistesthätigkeit des Menschen und die mechanischen Bedingungen der bewussten Empfindungsausserung auf Grund einer einheitlichen Weltanschauung. Vorträge von J. G. VOGT. Mit erläuternden Holzschnitten. Leipzig : M. A. Schmidt, 1887. Pp. 140.

This is an interpretation of the facts of psychology in the interests of a materialistic view of the world. The author's materialism is, however, modified by the positions (1) that we do not know what matter is in itself; (2) that every atom has an element of feeling attached to it, and that it is out of the combinations of these feelings that intellect arises. Nature has an end that is not to be expressed in anthropomorphic terms. The end for which living beings are evolved is neither happiness (as the pessimists think it ought to be) nor knowledge (as idealists imagine), but simply "orientation" in the system of things; the brain being the great "organ of orientation". Idealism is an expression of the arrogance of man; but this arrogance is an artifice of Nature devised to intensify man's energy; for a belief that he is at the summit of things furnishes him with a powerful motive to action. Hence the majority will always be favourable to idealistic doctrines. A few see through this illusion, "descend from the mock throne of the Ego," and make their brain-mechanism a mirror of the mechanical processes of the real world. "This mirroring of the mechanical world-process in our brain is indeed an imperfect, a fragmentary one. It will be complete and all-revealing only in the world-intellect that develops itself out of the whole fundamental scale of feeling, in which accordingly the mechanical process will be able to mirror itself in all its modalities."

Hegel's Offenbarungsbegriff. Ein Religionsphilosophischer Versuch von Dr. JOHANNES WERNER. Leipzig : Breitkopf & Härtel, 1887. Pp. 90.

A critical exposition of Hegel's conception of "revelation," more especially in its religious sense. The author finds that the true heirs of Hegel's thought were neither the Right nor the Left, but the Centre, represented by those who, like Vatke and Zeller, have not slavishly followed the master but have worked independently from his point of view.

Zur Psychophysik des Lichtsinns. Von HJALMAR NEIGLICK. ("Separat-
Abdruck aus dem, Anfang März erscheinenden, Bd. IV., Heft 1, der
Philosophische Studien, herausgegeben von WILHELM WUNDT.") Leip-
zig : W. Engelmann, 1887. Pp. 84.

These psychophysical researches, on the sense for degree of intensity of light, made by the "method of contrasts" so largely employed by Delboeuf, have yielded the following results:—“(1) In some cases a geometrical series of physical stimuli corresponds, as the law of Weber requires, to the arithmetical series of differences of sensation: this geometrical series of stimuli then calls forth a series of reciprocal contrasts of equal intensity; (2) in other cases, and indeed the most, the law of Weber does not apply: but in those cases contrasts of equal intensity correspond to no geometrical series of stimuli” (p. 73). The concluding pages are occupied with an attempt to fit these results “into the frame of familiar psychological facts”.

RECEIVED also:—

- A. H. Sayce, *Religion of the Ancient Babylonians* (Hibbert Lectures). Lond., Williams & Norgate, pp. 558.
- S. Bryant, *Educational Ends, or the Idea of Personal Development*, Lond., Longmans, pp. 292.
- L. Johnstone, *A Short Introduction to the Study of Logic*, Lond., Longmans, pp. 250.
- A. Stöckl, *Handbook of the History of Philosophy*. i. *Pre-Scholastic Philosophy* (trans. T. A. Finlay), Dublin, M. H. Gill, pp. 285.
- S. Drey, *Herbert Spencer's Theory of Religion and Morality*, Lond., Williams & Norgate, pp. 17.
- E. Pluzanski, *Essai sur la Philosophie de Duns Scot*, Paris, E. Thorin, pp. 296.
- J. Simon, *Victor Cousin*, Paris, Hachette, pp. 184.
- O. De Sanderval, *De l'Absolu*, Paris, F. Alcan, pp. 211.
- J. Delboeuf, *De l'Origine des Effets curatifs de l'Hypnotisme*, Paris, F. Alcan, pp. 42.
- A. de Bella, *Prolegomini di Filosofia elementare*, 3a ed., Torino, L. Roux, pp. 176.
- R. Sommer, *Locke's Verhältniss zu Descartes*, Berlin, Mayer u. Müller, pp. 63.
- J. Raffel, *Die Voraussetzungen welche den Empirismus Locke's, Berkeley's u. Hume's zu Idealismus führten*, Berlin, Mayer u. Müller, pp. 46.
- J. Gavanescul, *Die pädagogischen Ansichten Locke's in ihrem Zusammenhang mit seinem philosophischen System*, Berlin, G. Schade, pp. 84.
- M. Lazarus, *Treu u. Frei: Gesammelte Reden u. Vorträge über Juden u. Judenthum*, Leipzig, C. F. Winter, pp. 355.
- H. Romundt, *Die drei Fragen Kant's*, Berlin, Nicolai, pp. 64.
- E. v. Schmidt, *Begriff u. Sitz der Seele*, Heidelberg, G. Weiss, pp. 76.
- F. Wollny, *Grundriss der Psychologie*, Leipzig, T. Thomas, pp. 121.

NOTICE will follow.

VII.—NOTES.

A REMARKABLE CASE OF AMNESIA.

It is by no means a new observation that in case of cerebral concussion the resulting unconsciousness is found sometimes to involve a complete loss of memory for a period, greater or less, before the accident ; but the fact is so curious that, pending any likely explanation, it is well to put on record thoroughly well attested instances as they happen. A psychologist of Prof. Bain's eminence has recently had the misfortune to have such a psychological experience, of which he gives the following account :—

"On the 23rd October last I rode out on horseback. The horse stumbled and fell. A labourer in an adjoining field saw the fall ; on running up, he found me overlaid by the horse, and dragged me out insensible. I was taken to the adjoining farm-house, and was found to have sustained various injuries, the worst being a bad dislocation of the right shoulder. The insensibility continued upwards of three hours, during which time the shoulder was set without pain or knowledge. When consciousness returned, the memory of what led to the accident was discovered to be completely obliterated. In fact, the loss of memory extended to a full hour previous, and it has not yet been recovered. In no other respect did the concussion leave any permanent injury to the mental faculties."

Prof. Bain was found on a different road from that which he remembers he, more than an hour earlier, intended to take on his way home. He must have changed his mind ; but of the change, as of all that followed upon it till the time of the accident, he has as little recollection as of the hours he lay unconscious. It was not a very long period of unconsciousness, nor is the lapse of memory—for a single hour or so—very extensive. That there may possibly be some relation between the length of the two periods in cases of the kind is suggested by the facts of another case which I have later had the opportunity of verifying with the utmost care, and which are certainly so remarkable in themselves as to deserve henceforth to rank as 'the first instance' of their class.

On the 27th September last year, at Belper, in Derbyshire, the Hon. F. Strutt was thrown from a dog-cart, which he had suddenly to pull aside against a pavement in order to escape collision with a cart meeting him. He was driving three other people at the time, and was by them seen to fall on his right side. What followed as he lay on the ground is uncertain ; but, however caused, the result of the accident was extensive fracture of the base of the skull, shown by copious bleeding from the right ear and from the nose. Though, externally, there was only some blackness round the left eyelid, and slight abrasion of the skin on the left side of the face, the nerves on that side were so deeply injured that, besides loss of common sensation at first, sight and hearing (of left eye and ear) have perished ; also, the hearing of the right ear has been affected. Mr. Strutt was taken up unconscious, and in such a state of collapse that for some time death was hourly expected. After some days, nourishment in liquid form began to be taken, and thenceforth his strength was maintained, but he continued unconscious. It was not till the beginning of February, after four months' interval, that he 'came to himself' again, having for some days previously begun to show signs of returning sense. At a much earlier stage, some four weeks after the accident, he was thought to be recovering consciousness, but he had then a serious relapse ; being afterwards moved first from

Belper to his mother's house in Nottinghamshire and then, towards the end of January, to London, before the recovery took place. It was gradual. In the course of January he seemed to recognise his mother, who had nursed him all through, and later on external things began to affect him now and again in a more or less determinate way. About the end of the month, he had some experiences—which he calls and remembers as dreams—that evidently were his first definite apprehension of the people and things about him, overlaid with fantastic representation. From the beginning of February his perception became more and more clear and his language sensible, till in the second week he could, as he says (being an eager politician), have told the names of all the members for Derbyshire. But then it was found that he had lost all memory not only of the accident, but of the events of some days before. The accident was on a Monday, and he had perfect recollection of where he had been and what he had done up to the morning of the previous Monday; from that time onwards he could recall nothing. The week had been an unusually busy one, full of incidents that he might well remember; and, as it happened, he wrote a letter to his mother on the day before the accident, detailing the events of the previous days. I have seen this letter, and it is possible from it and from other written records to make out the exact history of the week. He sold some cattle, and paid the money into his bank; heard one afternoon a lecture given by a friend to an archaeological society, and entertained the members afterwards at his house; attended a public concert; presided at a meeting for University-extension; wrote, printed and sent out an important circular to a number of Boards of Guardians; took the chair at a public supper; spoke at a great political demonstration; received family intelligence that particularly interested him; and finally, just before the accident, was engaged in the transaction of business of quite special importance to himself. Of all this and more, everything has clean vanished from him; except only that he imagines he has some faintest reminiscence of a dark woman singing and of a number of people on a lawn—but not till after reading his letter which mentions the one and suggests the other. About the cattle (not mentioned in the letter) he inquired in the second week of February, remembering that he had wished for some time to sell them, but having no suspicion of the actual sale some seven days before the accident.

The facts could not be more exactly ascertained, and the present object is only to put them on record. I am unable, where now writing, to compare them with the particulars of other recorded cases, a number of which (according to M. Ribot) are to be found in the *Dictionnaire encyclopédique des Sciences médicales*, art. "Amnésie," by J. Falret, besides one (similar in character to Prof. Bain's) in Carpenter's *Mental Physiology*, p. 450. I have heard privately of one case where, the unconsciousness being limited to a few minutes, the lapse of memory extended to only two or three minutes before the accident that caused it: which is further confirmatory, so far as it goes, of the notion that the length of the unconscious period may somehow determine the extent of the amnesia. On the other hand, there are certainly cases where, upon recovery of consciousness, the circumstances of the accident do not fail to be remembered.

EDITOR.

MILL'S DOCTRINE OF NATURAL KINDS.

I am glad that Mr. Towry has stated this question in the last number of *MIND*, because I think his Note goes far to show that Classification is out of the province of Logic altogether. It is impossible, I believe, to

classify objects in a manner likely to prove of general use without a competent knowledge of these objects and their properties. Certain logicians may possess this knowledge, but if so it is not by their logical researches that they have acquired it. Other logicians who have confined their attention more especially to their own science do not possess it, and I do not believe that general directions as to Classification given by a man who has no special knowledge of particular objects are likely to be of much use to the man who possesses the information which his adviser lacks.

Mr. Towry raises an important issue by his fourth objection. "Are there," he asks, "in nature, classes clearly marked off from each other, classes that ought to be sought for by us?" I recognise fully the importance of the inquiry, but as a logician, and a logician only, how am I to answer it? Does the law of gravitation hold good in the solar system only, or does it extend to the region of the fixed stars? is likewise a very important inquiry; but is it one that a logician can be reasonably expected to answer? And in like manner the question, Are there Natural Kinds or not? is in my opinion clearly one which the physicist, not the logician, is called upon to answer. Then as to the answer, physicists are not agreed. Darwinism is now in the ascendant, but it cannot be said to have been universally accepted. According to this doctrine there are no such things as Natural Kinds separated from each other by impassable barriers; and whenever the line of demarcation between what I may call two adjacent kinds appears to be impassable, it is only because the intermediate members have perished in the struggle for existence. This, at least, is the current doctrine as regards the organic world. As regards the inorganic world, the doctrine of distinct chemical elements separated from each other by impassable barriers (at least so far as the *simple* elements are concerned) is still the current one; but many persons are prepared to accept Mr. Lockyer's theory, that the supposed simple chemical elements are all allotropic forms of hydrogen. Mill would probably have treated coal, plumbago and diamond as different Natural Kinds, but they are different forms of carbon, passing into each other under known physical conditions. He would probably have also treated heat, electricity and motion as distinct Natural Kinds, each possessing its own laws, but they can all be converted into each other by known processes. At all events, if Mill would not have treated these things as distinct Natural Kinds, he would have rested his refusal to treat them as such on purely physical grounds.

Physically, it may be true that if a number of objects agree in certain qualities, we can predict their agreement in certain other qualities; and the physicist may also believe with confidence that this agreement extends beyond what he has as yet discovered and that new points of agreement at present unknown will be discovered hereafter. But what right (as Mr. Towry very properly asks) has the logician to assume that any two objects agree in more respects than those in which they are known to agree? It is not for him to anticipate physical discoveries, and discoveries which it is quite possible may never be made.

I do not concur with everything that Mr. Towry lays down in connexion with this subject; but I concur with him (if, indeed, he is disposed to go that length) in thinking that the doctrine of Natural Kinds, whether true or false, is entirely out of the province of Logic, and also in thinking that the doctrine in question has not been substantiated on satisfactory physical grounds.

To avoid misconception, however, I add, that as judgments or propositions usually contain assertions about classes, the logician is bound to explain briefly what classes *are*. But the problem of Classification is not to explain how men in fact classify objects, but how they can classify them

most advantageously, either with a view to investigating their properties or with a view of communicating the knowledge of their properties to others. I do not believe that general rules laid down for this purpose by a logician who is not a specialist will prove of any use ; while, if the logician is a specialist, his rules will probably be found useful only in the particular subjects to which he has devoted his attention, and even there may require considerable amendment, as the science advances. I have no faith in rules for classification laid down by a logical Jack-of-all-trades and master of none. This would not, indeed, be a true description of Mill, who was undoubtedly a master in certain departments, but I fear his example has given too much encouragement to a kind of (so-called) Logic which refuses to rest solely on the laws of Mind, and yet does not require a complete knowledge of the laws of Matter. A Logic on the basis of Mill's system, written by a man who had thoroughly mastered all the latest developments of Mathematics, Physics and Psychology, would be a most valuable work, though no doubt destined to be superseded hereafter when these sciences were more advanced. But who is to write it ? And as the sciences are advancing with rapid strides in all directions, what prospect is there that we shall ever possess a logician who is thoroughly acquainted with them all ? Mill's criticisms on the wave-theory of light are sufficient to show that there was at least one trade in which his position was that of a mere Jack, though a very logical Jack.

W. H. S. MONCK.

THE ARISTOTELIAN SOCIETY FOR THE SYSTEMATIC STUDY OF PHILOSOPHY (22 Albemarle Street, W.).—At the business meeting, June 6, the Report of the Committee and Program for the following Session were adopted. The Officers of the Society were re-elected. The first meeting of the next (the ninth) Session is fixed for Monday, Nov. 7, at 8 P.M., when Mr. Shadworth H. Hodgson will deliver the Presidential Address,—subject : “The Unseen World”. Two evenings in the course of the Session will be devoted to the reading and discussion of short papers by various contributors on some subject fixed beforehand, the papers having been previously circulated among the contributors, so as to give the discussion the form of a “symposium”. The *Abstract of Proceedings* for the Eighth Session, including the Report, List of Members, &c., and edited by Professor Wyndham R. Dunstan, V.P., has now appeared. Non-members may obtain copies, as well as Program-cards for the Session, by application to Mr H. W. Carr, Hon. Sec. [The Society is to be congratulated on its first official publication. It runs to 43 pp. The abstracts of papers read, furnished apparently by the writers, differ considerably in length, and in some cases give a very adequate notion of the arguments. Their subjects—somewhat too varied in character to be easily remarked upon here—have all been recorded in previous Nos. of MIND.]

THE JOURNAL OF SPECULATIVE PHILOSOPHY.—Vol. xx., No. 3. The Divine Pymander of Trismegistus (ii.). W. James—The Perception of Time. Hegel—Philosophy of Religion (trans.—Introduction completed). J. M. Long—Classification of the Mathematical Sciences. The Concord Summer School of Philosophy in 1887 : Course of Study in Aristotle, and Bibliography.

REVUE PHILOSOPHIQUE.—An. xii., No. 7. C. Seignobos—Les conditions psychologiques de la connaissance en histoire (i.). E. Durkheim—La science positive de la morale en Allemagne : i. Les économistes, les sociologues et les juristes. J. M. Guardia—Les sentiments intimes d'Auguste Comte, d'après son testament. P. Tannery — Le monisme de Mélisson.

Analyses et Comptes-rendus (P. Carus, *Monism and Meliorism*; E. Saltus, *The Anatomy of Negation*, &c.). Rev. des Périod. No. 8. E. Durkheim—La science, &c. ii. Les moralistes, M. Wundt. A. Binet—Le fétichisme dans l'amour : étude de psychologie morbide (i.). C. Seignobos—Les conditions psychol., &c. (fin). H. Neiglick—Rapports entre la loi de Weber et les phénomènes de contraste lumineux. *Analyses*, &c. (J. Dewey, *Psychology*, &c.). Rev. des Périod. Soc. de Psych. phys. (Fontan)—Hystéro-épilepsie masculine : suggestion, inhibition, transposition des sens). Note sur "l'amour du mal". No. 9. L. Dauriac—Le criticisme et les doctrines philosophiques. A. Binet—Le fétichisme, &c. (fin). E. Durkheim—La science, &c. (fin). P. Tannery—La cosmogonie d'Empédocle. *Analyses*, &c. Soc. de Psych. phys. (Ch. Richet—Actions réflexes psychiques).

LA CRITIQUE PHILOSOPHIQUE (Nouv. Sér.).—An. iii., No. 6. E. Blum—Un sociologue inconnu : essai sur Ballanche. C. Renouvier—Réponse aux objections de M. Thos. Whittaker contre un système de classification des doctrines philosophiques. F. Pillon—Philosophie de l'histoire grecque. L. Dauriac—Sens commun et raison pratique.

RIVISTA ITALIANA DI FILOSOFIA.—Vol. ii., Disp. 1. G. Barzellotti—La morale come scienza e come fatto e il suo progresso nella storia. L. Credaro—Il Kantismo in G. D. Romagnosi. A. Valdarnini—Ancora sulla legge suprema dell'educazione. F. Bonatelli—Concorso per le scienze filosofiche. N. Fornelli—Il fondamento morale della pedagogia secondo Herbart e la sua scuola. Bibliografie, &c.

RIVISTA DI FILOSOFIA SCIENTIFICA.—Vol. vi., No. 6. E. Regalia—Non "origine" ma una legge negletta dei fenomeni psichici. B. Labanca—Iddio nella filosofia cristiana. F. Puglia—Genesi ed evoluzione dei più importanti diritti della personalità umana. Riv. Anal., &c.

ZEITSCHRIFT FÜR PHILOSOPHIE, &c.—Bd. xc., Heft 1. J. Volkelt—Psychologische Streitfragen (i.). L. Busse—Beiträge zur Entwicklungsgeschichte Spinoza's (i.). E. Arleth—Ueber Aristoteles' *Eth. Nic.* i. 5, 1097 b, 16 ff. R. Falckenberg—R. Eucken's *Prolegomena*, &c. Erwiderungen (Steudel gegen Schuppe. Schubert-Soldern gegen Lipps). Recensionen. Heft. 2. C. Gutberlet—Teleologische Streitfrüchte. G. Simmel—Ueber die Grundfrage des Pessimismus in methodischer Hinsicht. G. Knauer—Reflexion u. Reflexionsbegriffe. Recensionen. Bibliographie, &c. Bd. xci., Heft 1. H. Göring—Sophie Germain, die Vorläuferin Comte's. J. Witte—Logische Forschungen der Gegenwart u. Harms' opus posthumum. G. Cantor—Mitteilungen zur Lehre vom Transfiniten. W. Koppelman—Romundt's *Grundlegung zur Reform der Philosophie*. Recensionen.

PHILOSOPHISCHE MONATSHEFTE.—Bd. xxiii., Heft 9, 10. C. Baeumker—Die Ewigkeit der Welt bei Plato. O. Schneider—Positivismus u. Transcendentalphilosophie. F. Tönnies—Leibniz u. Hobbes. Recensionen. Literaturbericht. Bibliographie, &c.

ZEITSCHRIFT FÜR VÖLKERPSYCHOLOGIE U. SPRACHWISSENSCHAFT.—Bd. xvii., Heft 3. H. Steinthal—Begriff der Völkerpsychologie. A. Nagele—Der Schlangen-Cultus. S. Maybaum—Die Zerstörung des Tempels u. des Prophetenhäuses zu Siló. O. Kares—Die Formenverhältnisse des Wortschatzes u. die sprachlichen Baustile (ii.). Beurteilung.

PHILOSOPHISCHE STUDIEN.—Bd. iv., Heft 3. W. Wundt—Die Empfindung des Lichts u. der Farben. N. Lange—Beiträge zur Theorie der sinnlichen Aufmerksamkeit u. der aktiven Apperception. R. Glass—Kritisches u. experimentelles über den Zeitsinn. L. Lange—Ein Chronograph nebst Controlapparat für sehr genaue Messungen.

